

Reasoning



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REASONING

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1

ODD ONE OUT

In this type of questions five items are given out of which four are same in some manner or meaning and only one item is different from the other four. You have to select the odd item as your answer.

Example.

1. In the following question, four words are alike in some manner, and make a group. Choose the one item which does not fit in the given group.

(1) Parrot (2) Bat (3) Crow
(4) Sparrow (5) Pigeon

Answer with Explanations:

Here, all except Bat, belong to the class of aves (Birds) while Bat is a mammal. Hence the answer is (2).

2. In the following question, four words are alike in some manner, and make a group. Choose this one which does not fit in the given group.

(1) Kanpur (2) Allahabad (3) Varanasi
(4) Mathura (5) Haridwar

Answer with Explanations:

Here, all except Mathura are cities situated on the banks of Ganga river. Hence the answer is (4).

3. In the following question, five number are given, four of which are alike in a certain way but the remaining one is different. Choose the one which is different from the other four.

(1) 121 (2) 137 (3) 153
(4) 177 (5) 183

Answer with Explanations:

121 is the only perfect square number in the group. Others are non-perfect square numbers. Hence the answer is (1).

4. Choose the number pair/group which is different from others?

(1) 2 - 8 (2) 3 - 27 (3) 4 - 32
(4) 5 - 25 (5) 6 - 216

Answer with Explanations:

In all other pairs, second number is the cube of the first. But it is not true for option (3). Hence the answer is (3).

Choose the group of letters which is different from others.

(1) AOT (2) CPA (3) REB
(4) TIW (5) QOD

Answer with Explanations:

In all others groups except (2), the middle letter is a vowel. Hence the answer is (2).

Exercise:

1. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Teacher (2) Engineer
(3) Architect (4) Doctor
(5) Scientist
2. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Listen (2) Feel
(3) Think (4) Sing
(5) Hear
3. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Anxiety (2) Anger
(3) Sorrow (4) Joy
(5) Feeling
4. Four of the following five words are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Three (2) Four
(3) Five (4) Six
(5) Nine
5. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Anxiety (2) Worry
(3) Inhibition (4) Curiosity
(5) Weariness
6. Four of the following five are alike in a certain way and hence form a group. Find the one which is different from the other four.
(1) Rice (2) Wheat
(3) Barley (4) Mustard
(5) Bajra
7. Four of the following five are alike in a certain way and hence form a group. Find the one which is different from the other four.
(1) Arrow (2) Sword
(3) Knife (4) Axe
(5) Pistol
8. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Pear (2) Jackfruit
(3) Watermelon (4) Papaya
(5) Mango
9. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Pencil (2) Sharpener
(3) Blackboard (4) Chalk
(5) Pen
10. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Tortoise (2) Frog
(3) Rat (4) MongOOSE
(5) Snake
11. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Swan (2) Crocodile
(3) Frog (4) Snake
(5) Chicken
12. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Coriander (2) Potato
(3) Beetroot (4) Onion
(5) Ginger
13. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Crow (2) Vulture
(3) Bat (4) Ostrich
(5) Eagle
14. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Volume (2) Size
(3) Large (4) Shape
(5) Weight
15. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) Mars (2) Sun
(3) Saturn (4) Mercury
(5) Venus

16. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Jackal (2) Cheetah
 (3) Tiger (4) Lion
 (5) Dog
17. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Cheese (2) Butter
 (3) Milk (4) Curd
 (5) Ghee
18. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Sultry (2) Hot
 (3) Humid (4) Warm
 (5) Cool
19. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Now (2) After
 (3) Then (4) Before
 (5) Again
20. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Nanak (2) Christ
 (3) Buddha (4) Gandhi
 (5) Mahavira
21. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Feeling (2) Joy
 (3) Anxiety (4) Anger
 (5) Sorrow
22. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Dog (2) Horse
 (3) Goat (4) Cat
 (5) Fox
23. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Tomato (2) Carrot
 (3) Ginger (4) Potato
 (5) Turmeric
24. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Skull (2) Appendix
 (3) Pelvis (4) Fibula
 (5) Vertebra
25. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Buffalo (2) Lama
 (3) Cow (4) Goat
 (5) Camel
26. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Tiger (2) Dolphin
 (3) Zebra (4) Lion
 (5) Crocodile
27. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Ranthambor (2) Sunderban
 (3) Kaziranga (4) Ghana
 (5) Gangtok
28. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Nephrology (2) Entomology
 (3) Astrology (4) Mycology
 (5) Pathology
29. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Kathakali (2) Disco
 (3) Garba (4) Bhangra
 (5) Bharatnatyam
30. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Kwashiorkor (2) Cretinism
 (3) Marasmus (4) Goitre
 (5) Osteomalacia

31. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Tarapur (2) Kota
 (3) Kalpakkam (4) Paradwip
 (5) Narora
32. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Indigo (2) Orange
 (3) Yellow (4) Pink
 (5) Green
33. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Copper (2) Zinc
 (3) Brass (4) Aluminum
 (5) Iron
34. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Bake (2) Peel
 (3) Fry (4) Boil
 (5) Roast
35. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) Gurudwara (2) Mosque
 (3) Church (4) Monastery
 (5) Temple
10. 5; All others have feet.
11. 5; Chicken is young one of hen.
12. 1; Except it others are obtained below the ground.
13. 3; Except it others are birds whereas bat is a mammal.
14. 3; Others are related to physical measurement.
15. 2; All except Sun are planets, while sun is a star.
16. 5; Others are wild animals.
17. 3; Others are the products made from milk.
18. 5; Except it others are synonymous to one another.
19. 5; Others are related with time.
20. 4; All except Gandhi are founders of religions.
21. 1; All others denote various feelings.
22. 5; Fox is a wild animal.
23. 1; All except Tomato grow underground.
24. 2; All except Appendix are bones, while appendix is an organ.
25. 2; All except Lama are milk-yielding animals.
26. 5; All except Crocodile are mammals, while crocodile is a reptile.
27. 5; All except Gangtok are animal sanctuaries, while Gangtok is the capital city of Sikkim.
28. 3; All except Astrology are branches of biology.
29. 2; All except Disco are Indian forms of dance.
30. 2; All except Cretinism are deficiency diseases, while Cretinism is a hormonal disease.
31. 4; All except Paradwip are atomic power stations, while Paradwip is a port.
32. 4; All except Pink are the colours seen in a rainbow.
33. 3; Here, all except Brass are metal, while Brass is an alloy.
34. 2; Here, all except Peel are different forms of cooking.
35. 4; All except Monastery are places of worship, while monastery is a place where monks stay.

Answers with explanation

1. 1; All the rest are exclusive professions while a teacher may be there in any of these categories.
2. 4
3. 5; All others are specific feelings.
4. 5; All others are consecutive numbers.
5. 4; All others are negative.
6. 4; Except 'mustard' each belongs to the same category, viz foodgrains. Mustard is an oilseed.
7. 1; All others are held in the hand and not shot out.
8. 2; All others are fruits.
9. 2; Except it all others are used for writing purpose.

ODD ONE OUT-2

1. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 120 (2) 5040 (3) 40320
(4) 720 (5) 52480
2. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to the group?
(1) 331654729 (2) 381154729
(3) 381654729 (4) 381664792
(5) 381654722
3. Four of the following are alike in a certain way and so form a group. Which is the one that does not belong to the group?
(1) 12 (2) 14 (3) 18
(4) 20 (5) 22
4. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 91 (2) 46 (3) 37
(4) 73 (5) 62
5. Four of the following five are alike in a certain way and so form a group. Which one of the following does not belong to the group?
(1) 126 (2) 122 (3) 65
(4) 50 (5) 170
6. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to the group?
(1) 169 (2) 179 (3) 135
(4) 149 (5) 151
7. Four of the following five are alike in a certain way and so form a group. Which one of the following is different from the group?
(1) 226 (2) 290 (3) 360
(4) 170 (5) 122
8. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 131 (2) 133 (3) 143
(4) 87 (5) 57
9. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 168 (2) 728 (3) 290
(4) 380 (5) 120
10. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 29 (2) 85 (3) 147
(4) 125 (5) 53
11. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 72 (2) 42 (3) 152
(4) 110 (5) 156
12. Four of the following are similar in some respect. Find the odd one?
(1) 143 (2) 63 (3) 195
(4) 15 (5) 257
13. Four of the following are similar in some respect. Find the odd one?
(1) 126 (2) 217 (3) 345
(4) 513 (5) 730
14. Four of the following are similar in some respect. Find the odd one?
(1) 123 (2) 107 (3) 47
(4) 97 (5) 231
15. Four of the following are similar in some respect. Find the odd one out.
(1) 1728 (2) 4913 (3) 13824
(4) 12067 (5) 35937
16. Four of the following are similar in some respect. Find the odd one?
(1) 7 (2) 3 (3) 18
(4) 12 (5) 4
17. Four of the following five are alike in a certain way and so form a group. Which one of the following does not belong to that group?
(1) 123 (2) 25 (3) 341
(4) 218 (5) 62
18. Four of the following five are alike in a certain way and so form a group. Which one of the following does not belong to that group?
(1) 13 (2) 29 (3) 38
(4) 8 (5) 20
19. Four of the following five are alike in a certain way and so form a group. Which one of the following does not belong to that group?
(1) 7 (2) 5 (3) 9
(4) 17 (5) 33
20. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 5625 (2) 676 (3) 4096
(4) 729 (5) 64

21. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 62-37 (2) 74-40 (3) 85-60
(4) 103-78 (5) 37-12
22. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 81-243 (2) 16-64 (3) 64-192
(4) 25-75 (5) 9-27
23. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 95-82 (2) 69-56 (3) 55-42
(4) 48-38 (5) 100-87
24. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 7-18 (2) 9-26 (3) 11-36
(4) 13-42 (5) 20-70
25. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 15-46 (2) 12-37 (3) 9-28
(4) 8-33 (5) 20-61
26. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 9:32 (2) 13:44 (3) 8:30
(4) 10:54 (5) 7:26
27. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 27:72 (2) 65:36 (3) 45:54
(4) 13:31 (5) 42:62
28. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) 16-40 (2) 18-45 (3) 14-28
(4) 8-10 (5) 10-25
29. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) KLL (2) DED (3) GHG
(4) ABA (5) BCB
30. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) JSAFE (2) ZGPKU (3) ERMTH
(4) LANCP (5) OPLQS
31. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) UHRNI (2) HBOKL (3) ELTNV
(4) ALIBY (5) TRPOV
32. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) ORYJ (2) IMTD (3) CGNZ
(4) JNUE (5) AELV
33. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) URINE (2) USAGE (3) USUAL
(4) UNDER (5) UKASE
34. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) SPREAD (2) VAULT (3) CREAM
(4) SPREE (5) PAINT
35. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) VIDEO (2) AUDIO (3) AWARE
(4) ARISE (5) ALERT
36. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) TRAIN (2) WHEAT (3) BRAIN
(4) PROUD (5) DRIVER
37. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) BEH (2) CFI (3) DGJ
(4) EHL (5) FIL
38. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) KRTSINSA (2) PENAL (3) RUUD
(4) IDHNI (5) ROAST
39. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) NCDT (2) BRSE (3) ZGHV
(4) AQDM (5) OPQT
40. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?
(1) PUT (2) END (3) OWL
(4) ARM (5) ACT

Answers with explanation

1. 5; $5! = 120$; $7! = 5040$
 $8! = 40320$; $6! = 720$. But 52480 is not the value of the factorial of any natural number.
2. 3; Except it others are written with the help of eight digits only.
3. 5; Except it, reducing each number by 1, will give result in the form of a prime number.
 $12 - 1 = 11$ (Prime no.); $14 - 1 = 13$ (Prime no.);
 $18 - 1 = 17$ (Prime no.); $20 - 1 = 19$ (Prime no.);
 But $22 - 1 = 21$ (It is not a prime no.).
4. 5; Sum of the digits of other numbers is equal to ten.
5. 1; The rest are based on the expression $x^2 + 1$.
 But $126 = 11^2 + 5$.
6. 1; The rest are not squares of a number.
7. 3; After a close look you will get that except 360 each number is one more than square of a natural number, i.e.
 $226 = 15^2 + 1$; $290 = 17^2 + 1$; $170 = 13^2 + 1$;
 $122 = 11^2 + 1$
8. 1; Except it all others are non prime numbers.
9. 4; Except it other numbers are either 1 less or 1 more than a perfect square number.
10. 3; All other numbers are in the form of $n^2 + 4$ where n is a natural number.
11. 3; $72 = 9^2 - 9$; $42 = 7^2 - 7$; $152 = 12^2 + 8$; $110 = 11^2 - 11$; $156 = 13^2 - 13$
 Except 152, others show the trend $x^2 - x$.
12. 5; The given numbers can be written as follows:
 $143 = 12^2 - 1$; $63 = 8^2 - 1$; $195 = 14^2 - 1$;
 $15 = 4^2 - 1$ But $257 = 16^2 + 1$
 Obviously, except 257 others can be written in the form $x^2 - 1$.
13. 3; Except it others can be written in the form $x^3 + 1$.
14. 5; The rest are prime nos. 231 is divisible by 3.
15. 4; The rest are the cube of some numbers.
 $1728 = (12)^3$, $4913 = (17)^3$, $13824 = (24)^3$,
 $35937 = (33)^3$
16. 3; The nos. are based on the expression $x^2 + 3$.
 Putting $x = 0, 1, 2, \dots$ we can get these nos. except 18.
17. 4; The rest are based on the expression $x^3 - 2$.
18. 3; The nos are based on the expression $n^2 + 4$.
19. 1; All the other numbers are in the form of $2^n + 1$ where n is a natural number.
20. 2; Except (2) perfect cube root of all the numbers are possible.
21. 2; Except (2) the difference between the given numbers is 25.
22. 2; Except (2) in all the options the second number is three times of the first number.
23. 4; Except (4) in all the options the first number is 13 more than the first number.
24. 3; Except (3) in all the options the second number = (First number $\times 4 - 10$).
25. 4; Except (4) in all the options the second number = (First number $\times 3 + 1$).
26. 3; Except (3) in all the options the second number = (First number $\times 3 + 5$).
27. 5; Except (5) in all the options the given number interchange their position like
 $27 \rightarrow 72$
 Interchange
28. 3; Except (3) in all the options the second number = (First number + Half of first number).
29. 1
30. 1; Except (1) in the options one vowel is used.
31. 1; Except (1) in all the positions two letters are in ascending order. For example 'KL' is in ascending order in option (2) and (3), 'IJ' is in ascending order in option (4) and 'PO' is in ascending order in option (5).
32. 1; Except (1) in all the options letters are in increasing order + 4, +7, +10.... from left to right.
33. 5; Except (5) in all the options the letters have meaningful word.
34. 4; Except (4) in all the options two different vowels are used and in the option (4) only one vowel 'E' is used twice.
35. 3; In (3) the vowel 'A' is used twice.
36. 5; Except (5) two vowels are used together in all the options.
37. 3; Except (3) in all the positions one vowel is used.
38. 3; Except (3) in all the positions vowel 'U' is used twice.
39. 4; Except (4) in all other options the two letters in the middle are consecutive.
40. 1; Except (1) in all the options, words are starting with vowel.

PAIR FORMATION

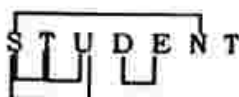
Let us look at the different types of the format of the question related with this topic.

FORMAT OF THE QUESTIONS :

1. How many pairs of letters are there in the word STUDENT, which have the same number of letters between them as in the English alphabet?

(1) Five (2) Six (3) Seven
(4) More than seven (5) None of these

Answer 1;



In this question you have to look such pairs in both ways i.e from left to right and from right to left.

2. How many pairs of letters are there in the word POPULATION, which have the same number of letters between them as in the English alphabet?

(1) Five (2) Six (3) Seven
(4) Ten (5) None of these

Answer 4;



In this question you have to look such pairs in both ways i.e from left to right and from right to left.

3. How many pairs of letters are there in the word SPONTANEOUS which have number of letters between them in the word one less than the number of letters between them in English alphabet?

(1) Five (2) One (3) Four
(4) Two (5) Three

Answer 1;



In each shown pairs there is one letter less than the number of letters between them in English alphabet.

4. How many pairs of letters are there in the word ANTEDILUVIAN which have number of letters between them in the word one more than the number of letters between them in English alphabet?

(1) One (2) Two (3) Three
(4) Four (5) None of these

Answer 3;

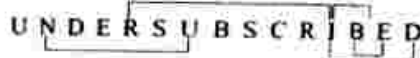


In each shown pairs there is one letter more than the number of letters between them in English alphabet.

5. How many pairs of letters are there in the word UNDERSUBSCRIBED which have number of letters between them in the word two less than the number of letters between them in English alphabet?

(1) one (2) two (3) three
(4) four (5) more than four

Answer 5;



In each shown pairs there is two letters less than the number of letters between them in English alphabet.

6. How many pairs of letters are there in the word VALETUDINARIAN which have number of letters between them in the word two more than the number of letters between them in English alphabet?

(1) 8 (2) 9 (3) 10
(4) 11 (5) None of these

Answer 1;



Such pairs are VT, LI, ED, UR, EA, IA, RL and DA.

In each shown pairs there is two letters more than the number of letters between them in English alphabet.

7. Which pair of the letters in the word BEAUTIFUL has the same relationship between its letters with respect to their position in the English alphabet as the pair EA in that word has between its letters?

(1) IB (2) LF (3) IE
(4) FL (5) TL

Answer 3;

B E A U T I F U L

In English alphabet there are three letters between A and E. Similarly, there are only three letters between E and I.

8. How many pairs of letters are there in the word STUDENT which have the same number of letters between them as in the English alphabet sequence?

(1) Five (2) Six (3) Seven
(4) More than seven (5) None of these

Answer 5;

S T U D E N T

In this question you have to look such pairs according to English alphabet sequence. Therefore, you have to count from left to right only.

9. How many pairs of digits are there in the number 189254367 which have the same number of digits between them as in the number sequence?

(1) Five (2) Six (3) Seven
(4) More than seven (5) None of these

Answer 4;

1 8 9 2 5 4 3 6 7

In this question you have to look such pairs according to number sequence. Therefore, you have to count from left to right only.

10. How many pairs of digits are there in the number 4683752 which have the same

number of digits between them as in the number sequence?

(1) None (2) One (3) Two
(4) Three (5) None of these

Answer 2; 4 6 8 3 7 5 2

In this question you have to look such pairs according to number sequence. Therefore, you have to count from left to right only.

11. How many such pairs of digits are there in the number 254983 each of which has as many digits between them in the number as when the digits are rearranged in descending order within the number?

(1) None (2) One (3) Three
(4) Five (5) More than five

Answer 5;

2 5 4 9 8 3
9 8 5 4 3 2

12. The positions of how many digits in the number 5321648 will remain unchanged after the digits are rearranged in ascending order within the number?

(1) None (2) One (3) Two
(4) Three (5) More than three

Answer 2;

Given Number : 5 3 2 1 6 4 8
Ascending Order : 1 2 3 4 5 6 8
Position of only one digit '8' remains unchanged.

13. The positions of how many digits in the number 59164823 will remain unchanged after the digits are rearranged in descending order within the number?

(1) None (2) One (3) Two
(4) Three (5) More than three

Answer 3;

Given Number : 5 9 1 6 4 8 2 3
Descending Order : 9 8 6 5 4 3 2 1
Positions of 4 and 2 remain unchanged.

Exercise:

1. How many pairs of letters are there in the word DIPLOMACY which have the same number of letters between them as in English alphabet?
(1) Three (2) Four (3) Five
(4) Six (5) None of these
2. How many pairs of letters are there in the word POPULATION which have the same number of letters between them as in English alphabet?
(1) Five (2) Six (3) Seven
(4) More than seven (5) None of these
3. How many pairs of letters are there in the word PROBATIONARY which have as many letters between them as in the English alphabet?
(1) Two (2) Three (3) Four
(4) Five (5) None of these
4. How many pairs of letters are there in the word MEDITATION which have the same number of letters between them as in English alphabet?
(1) Three (2) Four (3) Five
(4) Six (5) None of these
5. How many pairs of letters are there in the word GUIDELINES which have the same number of letters between them as in English alphabet?
(1) Three (2) Five (3) Six
(4) Four (5) None of these
6. How many pairs of letters are there in the word SECRETARIES which have the same number of letters between them as in English alphabet?
(1) Two (2) Three (3) Four
(4) Five (5) None of these
7. How many pairs of letters are there in the word BASKETBALL which have the same number of letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
8. How many pairs of letters are there in the word ROMANTICISM which have the same number of letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
9. How many pairs of letters are there in the word TECHNOCRATIC which have the same number of letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
10. How many pairs of letters are there in the word COMMERCIAL which have as many letters between them as in the alphabet?
(1) Five (2) Six (3) Seven
(4) Eight (5) None of these
11. How many pairs of letters are there in the word PRAKASHAN which have the same number of letters between them as in English alphabet?
(1) Two (2) Three (3) Four
(4) Nil (5) None of these
12. How many pairs of letters are there in the word SUPPOSITION which have the same number of letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
13. How many pairs of letters are there in the word STATIONMASTER which have the same number of letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
14. How many pairs of letters are there in the word PHARMACEUTICALS which have as many letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
15. How many pairs of letters are there in the word INTEGRATION which have the same number of letters between them as in English alphabet?
(1) Four (2) Five (3) Six
(4) Seven (5) None of these
16. How many such digits are there in the number 27561493 each of which is as far away from the beginning of the number as when the digits are arranged in descending order within the number?
(1) None (2) One (3) Two
(4) Three (5) More than three

17. In the number 7524693 how many digits will be as far away from the beginning of the number if digits are arranged in ascending order as they are in the number?

(1) None (2) One (3) Two
(4) Three (5) More than three

18. In the number 254983 how many digits are there which have as many digits in between them as there are in the number when arranged in descending order?

(1) None (2) One (3) Two
(4) Three (5) More than three

19. In the number 59164823 how many digits will be as far away from the beginning of the number if digits are arranged in descending order as they are in the number?

(1) None (2) One (3) Two
(4) Three (5) More than three

20. In the number 5321648 how many digits will be as far away from the beginning of the number if digits arranged in ascending order as they are in the number?

(1) None (2) One (3) Two
(4) Three (5) More than three

6. 4; SECRETARIES

7. 5; WASTEBASKET

8. 1; ROMANTICISM

9. 1; TECHNOCRATIC

10. 3; COMMERCIAL

11. 5; PRAKASHAN

12. 5; SUPPOSITION

13. 5; STATIONMASTER

14. 2; PHARMACEUTICALS

15. 1; INTEGRATION

16. 2; Given Number : 2 7 5 6 1 4 9 3
Descending Order : 9 7 6 5 4 3 2 1

17. 1; Given Number : 7 5 2 4 6 9 3
Ascending Order : 2 3 4 5 6 7 9

18. 5; Given Number : 2 5 4 9 8 3

Middle digits : 9 8 5 4 3 2

19. 3; Given Number : 5 9 1 6 4 8 2 3
Descending Order : 9 8 6 5 4 3 2 1

20. 2; Given Number : 5 3 2 1 6 4 8
Ascending Order : 1 2 3 4 5 6 8

Answers and Explanations:

1. 1; DIPLOMACY

2. 4; POPULATION

3. 2; PROXIMITY

4. 3; MEDITATION

5. 5; GUIDELINES

1. If 'x' means '+', '-' means 'x', '+' means '+' and '-' means '-' then
 $(3 - 15 \div 11) \times 8 + 7 = ?$
 (1) 1 (2) 4 (3) 0
 (4) 8 (5) None of these
2. If '+' means '-', 'x' means '-', '+' means 'x' and '-' means '+' then what will be the result of the following expression?
 $9 + 3 + 4 - 8 \times 12 = ?$
 (1) $-6\frac{1}{4}$ (2) $6\frac{3}{4}$ (3) 18
 (4) $-1\frac{3}{4}$ (5) None of these
3. If 'x' means '+', '-' means 'x', '+' means '+' and '-' means '-' then
 $(3 - 18 \div 11) \times 13 \div 8 = ?$
 (1) 18 (2) 13 (3) 11
 (4) 1 (5) None of these
4. If 'A' means '-', 'B' means '+', 'C' means '+' and 'D' means 'x' then -
 $25 B 5 C 24 A 2 D 12 = ?$
 (1) 34 (2) 5 (3) $-23\frac{4}{9}$
 (4) 2 (5) None of these
5. If 'Δ' means '+', '□' means 'x', '□' means 'x' and 'θ' means '÷' then
 $40 \square 8 \Delta 16 \Delta 4 \theta 13 = ?$
 (1) 69 (2) 75 (3) 78
 (4) 99 (5) None of these
6. If '+' means '+', 'x' means '+', '-' means 'x' and '-' means '-' then which of the following will be the correct equation?
 (1) $72 \div 6 - 3 \times 5 \div 3 = 38$
 (2) $72 \times 6 + 7 \div 2 - 6 = 24$
 (3) $72 \div 6 + 3 \times 5 - 3 = 45$
 (4) $72 - 6 + 3 \times 5 \div 3 = 64$
 (5) None of these
7. If '-' means '+', '+' means '-', 'x' means '+' and '+' means 'x' then which of the following will be the correct equation?
 (1) $10 + 5 - 14 \div 10 \times 15 = 180$
 (2) $30 + 5 + 14 - 10 \times 15 = 122$
 (3) $30 - 5 + 14 \div 10 \times 15 = 162$
 (4) $30 \times 5 - 4 + 10 + 15 = 81$
 (5) None of these
8. If '+' means '-', 'x' means '-', '+' means 'x' and '-' means '+' then
 $18 + 6 \times 4 - 4 = ?$
 (1) 12 (2) $\frac{20}{3}$ (3) $-\frac{20}{3}$
 (4) 12 (5) None of these
9. If '+' means '+', 'x' means '-', '+' means 'x' and '-' means '+' then
 $27 + 3 \div 4 - 8 \times 12 = ?$
 (1) 32 (2) $6\frac{3}{4}$ (3) $-1\frac{3}{4}$
 (4) $6\frac{1}{4}$ (5) None of these
10. If '÷' means 'x', 'x' means '-', '+' means '-' and '-' means '+' then
 $600 \div 5 + 15 - 20 \times 25 = ?$
 (1) 25 (2) -27 (3) 195
 (4) -45 (5) None of these
11. If '+' means '+', 'x' means '+', '-' means 'x' and '+' means '-' then which of the following will be the correct equation?
 (1) $24 + 8 - 7 \times 6 \div 4 = 25$
 (2) $20 \times 5 + 12 \div 6 \times 5 = 15$
 (3) $20 + 5 + 6 \times 12 - 4 = 67\frac{1}{6}$
 (4) $50 - 4 + 8 \times 18 \div 6 = 21$
 (5) None of these
12. If x means '+', y means '-', z means '+' and p means 'x' then
 $(20 p 2 \times 5 y 5) z 8 = ?$
 (1) 5 (2) 10 (3) 15
 (4) 20 (5) None of these

13. If '+' shows '+', '-' shows '-', '*' shows '×', '÷' shows '÷', '=' shows '=', '>' shows '>', '<' shows '<', and '≠' shows '≠' then the correct expression is-

- (1) $5 + 2 \times 1 = 3 + 14 > 11$
- (2) $5 > 2 \times 1 - 3 > 4 < 1$
- (3) $5 \times 2 < 1 - 3 < 4 \times 11$
- (4) $5 < 2 \times 1 \div 3 > 4 \times 11$
- (5) None of these

14. If '+' shows '>', '×' shows '+', '÷' shows '÷', '-' shows '=', '>' shows '×', '=' shows '<', '<' shows '÷' then which of the following will be the correct?

- (1) $3 + 2 < 4 \div 6 > 3 \times 2$
- (2) $3 \times 2 < 4 \div 6 + 3 < 2$
- (3) $3 > 2 < 4 - 6 \times 3 \times 2$
- (4) $3 \times 2 \times 4 = 6 + 3 < 2$
- (5) None of these

15. If '+' means '×', '×' means '÷', '÷' means '+', '-' means '-', then which of the following will be the correct?

- (1) $18 \div 6 - 7 + 5 \times 2 = 20$
- (2) $18 + 6 \div 7 \times 5 - 2 = 18$
- (3) $18 \times 6 + 7 \div 6 - 2 = 16$
- (4) $18 \div 6 \times 7 + 5 - 2 = 22$
- (5) None of these

16. If '-' means '+', '+' means '×', '×' means '÷', '÷' means '+', then which of the following will be the correct?

- (1) $6 \div 20 \times 12 \div 7 - 1 = 70$
- (2) $6 + 20 - 12 \div 7 \times 1 = 62$
- (3) $6 - 20 \div 12 \times 7 + 1 = 57$
- (4) $6 + 20 - 12 \div 7 - 1 = 38$
- (5) None of these

Directions (17-20): Study the following information carefully to answer the given questions:

- 'A * B' means 'A × B'.
- 'A @ B' means 'A - B'.
- 'A \$ B' means 'A + B'.
- 'A # B' means 'A ÷ B'.

17. Rupesh donates 7% of his monthly salary 'R' and ₹ 3000 as rent of his house. What will remain with him after donating 7% and paying house rent?

- (1) $R @ 3000 @ 7 * 100 \# R$

- (2) $R @ 7 * R \# 100 \# 3000$
- (3) $R @ (R * 7 \# 100 \$ 3000)$
- (4) $3000 \$ 7 * 100 \# R @ R$
- (5) None of these

18. What will be the average of five continuous even numbers in which 'S' is the smallest number?

- (1) $(S \$ 20) \# 5$
- (2) $30 \# S \$ 5$
- (3) $S \$ 4$
- (4) $S \$ 10 \# 5$
- (5) None of these

19. If the price of 6 lemons is ₹ 5 then how much lemons can be purchased in ₹ 100.

- (1) $6 * 5 \# 100$
- (2) $100 * 6 \# 5$
- (3) $100 \$ 6 * 5$
- (4) $6 * 100 @ 5$
- (5) None of these

20. The area of a circle is $\frac{22}{7}$ times the square of its radius. How many times the surface area of 21 circle will be of radius (r cm)?

- (1) $22 * r 7 * r \# 21$
- (2) $22 \# 21 * r * r$
- (3) $66 r^2 \# 7$
- (4) $66 * r * r$
- (5) None of these

21. If R means ×, D means ÷, A means + and S means -, then what is the value of 95 D 19 R 11 S 28 A 17?

- (1) 34
- (2) 46
- (3) 35
- (4) 48
- (5) None of these

22. If 'P' means '×', 'R' means '+', 'T' means '÷' and 'S' means '-', then

$$18 T 3 P 9 S 8 R 6 = ?$$

- (1) $-1\frac{1}{3}$
- (2) 46
- (3) 58

- (4) $\frac{2}{3}$
- (5) None of these

23. If '<' means 'minus', '>' means 'plus', '=' means 'multiplied by', and '\$' means 'divided by', then what would be the value of

$$27 > 81 \$ 9 < 8 = 2 = ?$$

- (1) 20
- (2) -4
- (3) 8
- (4) 56
- (5) None of these

24. If 'P' means 'division', 'T' means 'addition', 'M' means 'subtraction', and 'D' means 'multiplication', then what will be the value of the following expression?
 $12 M 12 D 28 P 7 T 15 ?$
 (1) -15 (2) 45 (3) -30
 (4) 15 (5) None of these
25. If '+' means 'divided by', '-' means 'added to', 'x' means 'subtracted from' and '÷' means 'multiplied by' then what is the value of:
 $24 \div 12 - 18 \div 9 ?$
 (1) 15.30 (2) 290 (3) -25
 (4) 0.72 (5) None of these
26. If '\$' means 'plus (+)', '#' means 'minus (-)', '@' means 'multiplied (*)', and '*' means 'divided (÷)', then what is the value of:
 $16 \$ 4 @ 5 \# 72 * 8 ?$
 (1) 29 (2) 27 (3) 25
 (4) 36 (5) None of these
27. If '+' means '-', '-' means 'x', 'x' means '÷' and '÷' means '+' in the given equation, then
 $[(217 \times 310) + (190 \div 114)] - 100 \div 50 = ?$
 (1) 40 (2) 60 (3) 80
 (4) 100 (5) None of these
28. If 'L' means 'x', 'M' means '+', 'N' means '-' and 'P' means '÷' then
 $14 N 2 L 7 P 25 M 1 = ?$
 (1) -25 (2) -23 (3) 25
 (4) 24 (5) None of these
29. If '+' means '-', '-' means '+', 'x' means '÷' and '÷' means 'x' then what is the value of
 $6 \times 3 \div 2 - 2 \div 5 = ?$
 (1) $8\frac{1}{5}$ (2) $2\frac{3}{5}$ (3) 3
 (4) $4\frac{2}{7}$ (5) 4
30. If 'P' denotes '+', 'Q' denotes 'x', 'R' denotes '-' and 'S' denotes '÷' then
 $18 Q 12 P 4 R 5 S 6 = ?$
 (1) 31 (2) 57 (3) 53
 (4) 95 (5) 0
31. If '+' means '-', '-' means 'x', 'x' means '÷' and '÷' means '+' then, find the value of
 $14 \times 3 \div 11 - 3 \div 101 = ?$
 (1) 63.3 (2) -63.3 (3) 63.48
 (4) 63.3 (5) -63
32. If '*' means 'x', '#' means '-', '@' means '÷' and '\$' means '+' then
 $25 \# 5 \$ 3 * 4 @ 6 = ?$
 (1) 12 (2) 15.3 (3) 22
 (4) 8 (5) None of these
33. If '-' means '+', '+' means 'x', 'x' means '÷' and '÷' means '-' then, which of the following equation is correct?
 (1) $36 - 12 \times 6 \div 3 + 4 = 60$
 (2) $43 \times 7 \div 5 + 4 - 8 = 25$
 (3) $36 \times 4 - 12 + 5 \div 3 = 420$
 (4) $52 \div 4 + 5 \times 8 - 2 = 36$
 (5) None of these
34. If '+' is written as 'x', '-' is written as '÷', 'x' is written as '-' and '÷' is written as '+' then what is the actual value of:
 $72 \div 9 \times 45 - 5 \div 42 - 6 ?$
 (1) 648 (2) 646 (3) 656
 (4) 636 (5) None of these
35. If 'P' means '-', 'Q' means 'x', 'R' means '÷' and 'S' means '+' then what will be the value of the following expression?
 $8 Q 7 S 30 R 15 P 10$
 (1) 33 (2) 39 (3) 48
 (4) 49 (5) 42
36. If 'P' means '+', 'Q' means 'x', 'R' means '÷' and 'T' means '-' then what will be the value of
 $120 R 15 Q 5 P 16 T 22 ?$
 (1) -34 (2) 16 (3) -35
 (4) 35 (5) 34
37. If '+' means '-', 'x' means '+', '-' means 'x' and '÷' means '÷' then what will be the value of
 $800 \div 20 - 4 \times 40 \div 10 ?$
 (1) 3984 (2) 984 (3) 3264
 (4) 190 (5) 200
38. If 'A' means 'x', 'B' means '+', 'C' means '÷' and 'D' means '-' then what is the value of
 $180 B 15 D 11 C 8 A 10 ?$
 (1) -79 (2) 102 (3) 83
 (4) 92 (5) None of these
39. If '+' stands for '-', '-' stands for '+', 'x' stands for 'x' and '÷' stands for '÷' then, which one of the following equations is correct?
 (1) $265 \div 11 - 2 \times 14 = 22$
 (2) $2 - 14 \times 4 \div 11 = 16$
 (3) $46 - 10 \div 10 \times 5 = 92$
 (4) $66 \times 3 - 11 \div 12 = 230$
 (5) None of these
40. If 'P' means 'x', 'Q' means '+', 'R' means '÷' and 'S' means '-' then what is value of
 $154 Q 14 S 7 P 3 R 25 ?$
 (1) 35 (2) 57 (3) 42
 (4) 25 (5) None of these

Answers with Explanation:

1. 3; After changing signs according to the question, the new equation will be:
 $(3 \times 15 + 11) + 8 - 7$
 $(45 + 11) + 8 - 7 = ?$
 $56 + 8 - 7 = ?$
 $7 - 7 = ?$
 $\therefore ? = 0$
2. 5; After changing signs according to the question, the new equation will be:
 $9 + 3 \times 4 + 8 - 12$
 $3 \times 4 + 8 - 12 = ?$
 $12 + 8 - 12 = ?$
 $20 - 12 = 8$
3. 2; After changing signs according to the question, the new equation will be:
 $(3 \times 18 + 11) \div 13 + 8$
 $= (54 + 11) \div 13 + 8$
 $= 65 \div 13 + 8 = 5 + 8 = 13$
4. 2; After changing signs according to the question, the new equation will be:
 $25 \div 5 + 24 - 2 \times 12$
 $= 5 + 24 - 24 = 29 - 24 = 5$
5. 5; After changing signs according to the question, the new equation will be:
 $40 \div 8 + 16 \times 4 - 13$
 $= 5 + 16 \times 4 - 13$
 $= 5 + 64 - 13 = 69 - 13 = 56$
6. 1; After changing signs according to the question, the new equations will be:
 Here,
 (1) $72 \div 6 \times 3 + 5 - 3 = 38$
 (2) $72 + 6 \div 7 - 2 \times 6 = 67$
 (3) $72 - 6 \div 3 + 5 = 85$
 (4) $72 \times 6 \div 3 - 5 = 146$
 From option (1),
 $72 \div 6 \times 3 + 5 - 3$
 $= 12 \times 3 + 5 - 3$
 $= 36 + 5 - 3$
 $= 38$ (True)
7. 4; After changing signs according to the question, the new equation will be:
 Here,
 (1) $10 - 5 + 14 \times 10 \div 15 = 14\frac{1}{3}$
 (2) $30 - 5 - 14 + 10 \div 15 = 11\frac{2}{3}$
 (3) $30 + 5 - 14 \times 10 \div 15 = 25\frac{2}{3}$
 (4) $30 \div 5 + 4 \times 10 - 15 = 31$
 From option (4),
 $30 \div 5 + 4 \times 10 - 15$
 $= 6 + 40 - 15$
 $= 46 - 15 = 31$ (True)
8. 5; After changing signs according to the question, the new equation will be:
 $18 + 6 - 4 \times 3 + 4$
 $= 3 - 4 \times 3 + 4 = 3 - 12 + 4$
 $= 7 - 12 = -5$
9. 1; After changing signs according to the question, the new equation will be:
 $27 - 3 \times 4 + 8 - 12$
 $= 9 \times 4 + 8 - 12$
 $= 36 + 8 - 12 = 44 - 12 = 32$
10. 3; After changing signs according to the question, the new equation will be:
 $600 \times 5 \div 15 + 20 - 25$
 $= 600 \times \frac{5}{15} + 20 - 25$
 $= 40 \times 5 + 20 - 25 = ?$
 $= 200 + 20 - 25 = ?$
 $= 220 - 25 = 195$
11. 3; After changing signs according to the question, the new equations will be:
 (1) $24 \div 8 \times 7 + 6 - 4 = 23$
 (2) $20 + 5 \div 12 - 6 + 5 = 19\frac{5}{12}$
 (3) $20 - 5 + 6 + 12 \times 4 = 67\frac{1}{6}$
 (4) $50 \times 4 + 8 + 18 - 6 = 37$
 From option (3),
 $20 - 5 + 6 + 12 \times 4$
 $= 20 - \frac{5}{6} + 48 = 68 - \frac{5}{6} = 67\frac{1}{6}$ (True)
12. 1; After changing signs according to the question, the new equation will be:
 $(20 \times 2 + 5 - 5) \div 8$
 $= (40 + 5 - 5) \div 8$
 $= (45 - 5) \div 8 = 40 \div 8 = 5$
13. 2; After changing signs according to the question, the new equations will be:
 Here,
 (1) $5 \div 2 + 1 < 3 \div 14 \times 11$
 or, $3.5 < 2\frac{5}{14}$ (Incorrect)
 (2) $5 \times 2 + 1 = 3 \times 4 - 1$ (Correct)
 (3) $5 + 2 - 1 = 3 - 4 + 11$

or, $9 = 10$ (Incorrect)
 (4) $5 - 2 + 1 > 3 \times 4 + 11$
 or, $4 > 23$ (Incorrect)

From option (2),
 $5 \times 2 + 1 = 3 \times 4 - 1$
 $= 11 = 11$ (True)

14.2; After changing signs according to the question, the new equations will be:

Here,
 (1) $3 + 2 - 4 > 6 \times 3 + 2$
 or, $-2.5 > 20$ (Incorrect)
 (2) $3 + 2 - 4 > 6 + 3 - 2$
 or, $1 > 0$ (Correct)
 (3) $3 \times 2 - 4 = 6 + 3 + 2$
 or, $2 = 11$ (Incorrect)
 (4) $3 + 2 + 4 < 6 \div 3 - 2$
 or, $9 < 0$ (Incorrect)

From option (2),
 $3 + 2 - 4 > 6 + 3 - 2 = 1 > 2 - 2 = 1 > 0$

15.2; After changing signs according to the question, the new equations will be:

$$(1) 18 \times 6 + 7 - 5 - 2 = 107 \frac{2}{5}$$

$$(2) 18 - 6 \times 7 - 5 + 2 = 18$$

$$(3) 18 - 6 - 7 \times 6 + 2 = 14 \frac{6}{7}$$

$$(4) 18 \times 6 - 7 - 5 + 2 = 108 \frac{3}{5}$$

From option (2),
 $18 - 6 \times 7 - 5 + 2 = 3 \times 7 - 5 - 2$
 $= 21 - 5 + 2 = 23 - 5 = 18$

16.1; After changing signs according to the question, the new equations will be:

$$(1) 6 - 20 + 12 \times 7 - 1 = 70$$

$$(2) 6 \times 20 - 18 - 7 + 1 = 4$$

$$(3) 6 \div 20 - 18 + 7 \times 1 = -4 \frac{7}{10}$$

$$(4) 6 + 20 \times 12 - 7 \div 1 = 3$$

From option (1),
 $6 - 20 + 12 \times 7 - 1$
 $= 6 - 20 + 12 \times 7$
 $= 6 - 20 + 84 = 90 - 20 = 70$

17.3; Remaining Amount.

$$= R - \left(\frac{7R}{100} + 3000 \right)$$

$$= R @ (R \times 7 \neq 100 \$ 3000)$$

18.3; Sum of five continuous even numbers
 $= S + S + 2 + S + 4 + S + 6 + S + 8$

$$= 5S + 20 = 5(S + 4)$$

$$\text{Average} = \frac{5(S+4)}{5} = S + 4$$

$$= S + 4 = \$ \$ 4$$

19.2; $\therefore$ In Rs. 5, 6 lemons can be purchased.
 $\therefore$ In Rs. 100, the number of lemons can be purchased

$$= \frac{6}{5} \times 100 = 100 \div 5 \times 6 = 120$$

20.4; Area of total 21 circles = $21 \pi r^2$

$$= 21 \times \frac{22}{7} \times r \times r$$

$$= 22 \times 3 \times r \times r$$

$$= 66 \times r \times r = 66 r^2$$

21.5; After changing signs according to the question, the new equation will be:

$$95 - 19 \times 11 - 28 + 17$$

$$= 5 \times 11 - 28 + 17 = 55 - 28 + 17$$

$$= 55 + 17 - 28 = 72 - 28 = 44$$

22.5; After changing signs according to the question, the new equation will be:

$$18 + 3 \times 9 - 8 + 6$$

$$= 6 \times 9 - 8 + 6 = 54 - 8 + 6$$

$$= 60 - 8 = 52$$

23.1; After changing signs according to the question, the new equation will be:

$$27 + 81 - 9 - 8 \times 2$$

$$= 27 + 9 - 16 = 36 - 16 = 20$$

24.5; After changing signs according to the question, the new equation will be:

$$12 - 12 \times 28 - 7 + 15$$

$$= 12 - 12 \times 4 + 15 = 12 - 48 + 15$$

$$= 27 - 48 = -21$$

25.2; After changing signs according to the question, the new equation will be:

$$24 \times 12 + 18 - 9$$

$$= 24 \times 12 + 2 = 288 + 2 = 290$$

26.2; After changing signs according to the question, the new equation will be:

$$16 + 4 \times 5 - 72 \div 8$$

$$= 16 + 4 \times 5 - 9$$

$$= 16 + 20 - 9 = 36 - 9 = 27$$

27.5; We have

$$[(217 \times 310) + (190 + 114)] \times 190 - 100 + 50$$

After changing signs according to the instruction in the question part, the new equation will be:

$$[(217 - 310) - (190 - 114)] \div 190 \times 100 + 50$$

$$= \left[\left(\frac{217}{310} - 76 \right) + 190 \right] \times 100 + 50$$

$$= \left[\frac{-753}{10} + 190 \right] \times 100 + 50$$

$$= -\frac{753}{1900} \times 100 + 50 = -39 \frac{12}{19} + 50 = 10 \frac{7}{9}$$

- 28.3; After changing signs according to the question, the new equation will be:

$$14 \div 2 \times 7 - 25 + 1$$

$$= 7 \times 7 - 25 + 1 = 49 - 25 + 1$$

$$= 49 + 1 - 25 = 50 - 25 = 25$$

- 29.1; After changing signs according to the question, the new equation will be:

$$6 + 3 - 2 \times 2 \div 5$$

$$= 6 + 3 - 2 \times \frac{2}{5} = 6 + 3 - \frac{4}{5} = 9 - \frac{4}{5}$$

$$= \frac{45 - 4}{5} = \frac{41}{5} = 8 \frac{1}{5}$$

- 30.3; After changing signs according to the question, the new equation will be:

$$18 \times 12 \div 4 + 5 - 6$$

$$= 18 \times 3 + 5 - 6$$

$$= 54 + 5 - 6 = 59 - 6 = 53$$

- 31.2; After changing signs according to the question, the new equation will be:

$$14 \div 3 + 11 \times 3 - 101$$

$$= \frac{14}{3} + 33 - 101 = -63 \frac{1}{3}$$

$$= -63.3333 \dots = -63.\bar{3}$$

- 32.3; After changing signs according to the question, the new equation will be:

$$25 - 5 + 3 \times 4 \div 6$$

$$= 25 - 5 + 3 \times \frac{2}{3} = 25 - 5 + 2$$

$$= 25 + 2 - 5 = 27 - 5 = 22$$

- 33.4; From equation (4), After changing signs according to the question, the new equations will be:

$$(1) 36 \div 12 + 6 - 3 \times 4 = -3$$

$$(2) 43 + 7 - 5 \times 4 \div 8 = 47 \frac{1}{2}$$

$$(3) 36 \div 4 + 12 \times 5 - 3 = 34 \frac{2}{3}$$

$$(4) 52 - 4 \times 5 + 8 \div 2 = 36$$

From option (4),

$$52 - 4 \times 5 + 8 \div 2$$

$$= 52 - 4 \times 5 + 4 = 52 - 20 + 4$$

$$= 52 + 4 - 20 = 56 - 20 = 36 \text{ (True)}$$

- 34.5; After changing signs according to the question, the new equation will be:

$$72 \times 9 - 45 \div 5 + 42 \div 6$$

$$= 72 \times 9 - 9 + 7 = 648 - 9 + 7$$

$$= 655 - 9 = 645$$

- 35.3; After changing signs according to the question, the new equation will be:

$$8 \times 7 + 30 \div 15 - 10$$

$$= 8 \times 7 + 2 - 10 = 56 + 2 - 10$$

$$= 58 - 10 = 48$$

- 36.5; After changing signs according to the question, the new equation will be:

$$120 \div 15 \times 5 + 16 - 22$$

$$= 8 \times 5 + 16 - 22 = 40 + 16 - 22$$

$$= 56 - 22 = 34$$

- 37.4; After changing signs according to the question, the new equation will be:

$$800 - 20 \times 4 + 40 - 10$$

$$= 40 \times 4 + 40 - 10$$

$$= 160 + 40 - 10 = 200 - 10 = 190$$

- 38.5; After changing signs according to the question, the new equation will be:

$$180 \div 15 - 11 + 8 \times 10$$

$$= 12 - 11 + 8 \times 10$$

$$= 12 - 11 + 80 = 92 - 11 = 81$$

- 39.4; From equation (4) After changing signs according to the question, the new equations will be:

$$(1) 265 - 11 \times 2 \div 14 = 263 \frac{3}{7}$$

$$(2) 2 - 14 \times 4 + 11 = 16$$

$$(3) 46 - 10 + 10 \times 5 = 92$$

$$(4) 66 \div 3 \times 11 - 12 = 230$$

From option (4):

$$66 \div 3 \times 11 - 12$$

$$= 22 \times 11 - 12 = 242 - 12$$

$$= 230 \text{ (True)}$$

- 40.5; After changing signs according to the question, the new equation will be:

$$154 \div 14 - 7 \times 3 + 25$$

$$= 11 - 7 \times 3 + 25 = 11 - 21 + 25$$

$$= 36 - 21 = 15$$

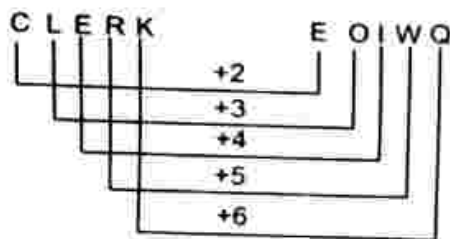
CODING-DECODING

CODING-DECODING :- Coding-Decoding is a secret language, which is used to change the representation of the actual terms or value of given words/letters/digits. The language of coding-decoding can be of different types.

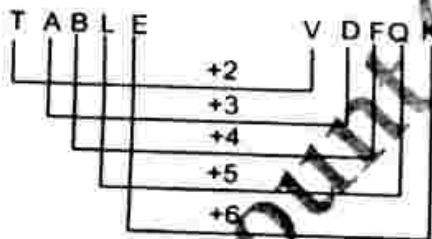
Example (1) In a certain language CLERK is written as EOIWQ. How is TABLE written in that code?

- (1) VCDNG (2) VCDGN
(3) VDFQK (4) VDFOK

Sol. (3):



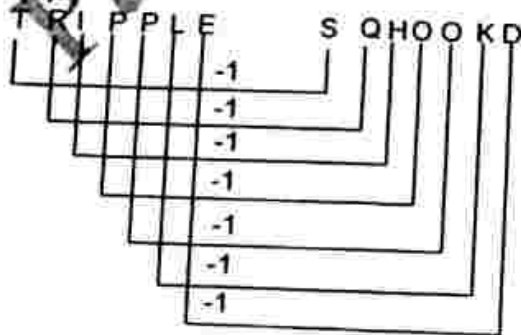
Similarly,



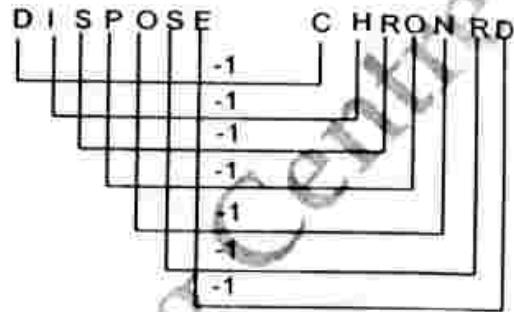
Example (2) In a certain language TRIPPLE is written as SQHOOKB. How is DISPOSE written in that code?

- (1) CHROMRD (2) CHROMSD
(3) CHRONRD (4) CHROORD

Sol. (3):



Similarly,



Example (3) In a certain language TWENTY is written as 863985 and ELEVEN is written as 323039. How is TWELVE written in that code?

- (1) 863230 (2) 863303
(3) 836203 (4) 863203

Sol. (4):

TWENTY
8 6 3 9 8 5 ... (I)

ELEVEN ... (II)
3 2 3 0 3 9

Here, according to equation (I) and (II), two letters E and N are common and the place value of E and N is 3 and 9. So the place value of other letters will be as follow : T = 8, W = 6, E = 3, N = 9, T = 8, Y = 5, L = 2, V = 0. Then, TWELVE = 863203.

Example (4) In a certain language ROPE is written as %57\$, DOUBT is written as 35#8* and LIVE is written as @24\$. How is TROUBLE written in that code?

- (1) *%5#8@\$ (2) *%#58@\$
(3) *%5#8@4 (4) *%#58\$@

Sol. (1):

ROPE DOUBT & LIVE
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
% 5 7 \$ 3 5 # 8 * @ 2 4 \$

Therefore,

TROUBLE
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
* % 5 # 8 @ \$

Example (5) In a certain language 'tom kun sud' means 'dogs are barking', 'kun jo mop' means 'dogs and horses' and 'mut tom ko' means 'donkeys are mad'. Which word in that language means 'barking'?

- (1) sud (2) kun
(3) hi (4) tom

Sol. (1): In the first and second statements, the common code-word is 'kun' and the common word is 'dogs'. So 'kun' means 'dogs'.

In first and third statements, the common code-word is 'tom' and the common word is 'are'. So, 'tom' means 'are'. Thus in the first statement, 'sud' means 'barking'.

Example (6) If 'cages' are called 'rockets', 'rockets' are called 'traps', 'traps' are called 'planets', 'planets' are called 'aeroplanes', 'aeroplanes' are called 'cycles' and 'cycles' are called 'cars', what is Earth?

- (1) cycles (2) rockets
(3) planet (4) aeroplanes

Sol. (4): Earth is a 'planet' and here 'planets' are called 'aeroplanes'. So 'earth' will be called aeroplane.

Example (7) In each question below is given a group of letters followed by four combinations of digits/symbols numbered (a), (b), (3) and (d). You have to find out which of the combinations correctly represents the group of letters based on the following letter coding system and mark the number of that combination as the answer.

Letter : D L E G Z K R U B W F H I A P
Digit/symbol : 4 8 \$ 1 # 5 7 0 2 6 % * 3 9 @

Conditions:

- (i) If the first letter is a vowel and the last is a consonant both are to be coded as the code of the consonant.
(ii) If both first and the last letters are consonants, both are to be coded '8'.
(iii) If first letter is a consonant and last is a vowel the codes for first and last letters are to be interchanged.

- (i) ELBGPU (1) \$821@ (2) 0821@\$
(3) \$8210@ (4) \$8120@
(ii) UHRKLZ (1) 0*7580 (2) 0*758#
(3) #*758# (4) \$%3462
(iii) BFIDWE (1) 2%346\$ (2) %3426\$
(3) \$%3426 (4) \$2%634
(iv) WKGLBA (1) 951862 (2) 651829
(3) 651892 (4) 951826

- (v) ZEFHIR (1) #5%*37 (2) 8\$%*38
(3) 75%*3# (4) #%\$*37

E L B G P U

Sol 7(i)-(1): 5 8 2 1 0 0

Here, Condition (i) follows

U H R K L Z

(ii)-(3): # * 7 5 8 #

Here, Condition (i) follows

B F I D W E

(iii)-(4): \$ % 3 4 6 2

Here, Condition (iii) follows

W K G L B A

(iv)-(4): 9 5 1 8 2 6

Here, Condition (iii) follows

Z E F H I R

(v)-(2): 8 \$ % * 3 8

Here, Condition (ii) follows.

Exercise:

- In a certain code, TERMINAL is written as SDQLIOBM. How is CREDIBLE written in that code?
(1) BQDCJCMF (2) DSFEJCMF
(3) BQDCHAKD (4) DSFEHAKD
(5) None of these
- In a certain code language LABOUR is written as KBAPTS. How is CANDID written in that code language?
(1) DBOEJE (2) DZOCJC
(3) BBMCHC (4) BBMEHE
(5) None of these
- In a certain code language CONSUMER is written as ERUMNSCO. How will TRIANGLE be written in that code language?
(1) LENGIATR (2) ELNGIATR
(3) LEGNIATR (4) LEGNAITR
(5) None of these
- In a certain code language BREAKDOWN is written as NWODKAERB. How will TRIANGLES be written in that code language?
(1) AIRTGNSSEL (2) SELGNTRIA
(3) AIRTNELO (4) SELGNAIRT
(5) None of these

5. In a certain code language BREAK, is written as 51342 and KITE is written as 2796. How will RIB be written in that code language ?

(1) 175 (2) 176 (3) 185
(4) 135 (5) None of these

6. In a certain code, 'SPRING' is written as '#2%@4=' and 'GONE' is written as '=74©'. How would 'SIGN' be written in the same code?

(1) #@4= (2) 2@=4 (3) #@=4
(4) #%=4 (5) None of these

7. In a certain code FIGHT is written as '39%#@4' and TEARS is written as '458©*'. How is STAGE written in that code?

(1) *4835 (2) *48%5 (3) *84%5
(4) *48@5 (5) None of these

8. In a certain code language 'tree is very beautiful' is written as 'ka na da ta' and 'this is strong tree' is written as 'na pa sa ka'. How is 'beautiful' written in that code language?

(1) da (2) ta (3) sa
(4) Data inadequate (5) None of these

9. In a certain code language 'si po re' means 'book is thick', 'ti na re' means 'bag is heavy', 'ka si' means 'interesting book' and 'de ti' means 'that bag'. What should stand for 'that is interesting' in that code language?

(1) ka re na (2) de si re
(3) ti po ka (4) de re ka
(5) None of these

10. If 'black' is called 'red', 'red' is called 'white', 'white' is called 'brown', 'brown' is called 'yellow', 'yellow' is called 'blue' and 'blue' is called 'green', then what is the colour of milk?

(1) blue (2) green (3) white
(4) red (5) None of these

11. If 'green' is called 'white', 'white' is called 'yellow', 'yellow' is called 'blue', 'blue' is called 'pink' and 'pink' is called 'black', then what is the colour of milk?

(1) green (2) blue (3) pink
(4) yellow (5) None of these

Directions:- In each of these questions a group of letters is given followed by four combinations of digit/symbol numbered (1), (2), (3) & (4). Letters are to be coded as per the scheme and conditions given below. You have to find out the serial number of the combination, which represents the letter group. Serial number of that combination is your answer. If none of the combinations is correct, your answer is (5) i.e. 'None of these'.

12 - 17:

Letters : F G A K M E S P L Q B U R I T

Digit/Symbol : 9 % 2 \$ * 7 @ 8 1 6 5 © 4 # 3

Conditions:

- If the first letter is a vowel and the last a consonant, both are to be coded as the code for the vowel.
- If the first letter is a consonant and the last a vowel, the codes for the first and the last letters are to be interchanged.
- If both the first and the last letters are consonants both are to be coded as 'δ'.
- If more than two vowels are there in the group of letters, all vowels are to be coded as £.

12. TEFSUM

(1) δ 79@©δ (2) 379@©* (3) *79@©3
(4) δ 79@δ© (5) None of these

13. BSQEGU

(1) 5@67%© (2) δ@67%δ (3) ©@67%©
(4) 5@67©% (5) None of these

14. KAGFUB

(1) \$2%9©5 (2) 52%9©\$ (3) \$2%©95
(4) δ 2%9©δ (5) None of these

15. AQUMTE

(1) 76©*32 (2) £6£*3£ (3) 26©*32
(4) 26©*23 (5) None of these

16. IPKUSR

(1) #8\$©@# (2) 48\$©@# (3) #8\$©@4
(4) #8\$4@ (5) None of these

17. MGSELI

(1) *%@71# (2) *%@17# (3) #%@71*
(4) %#@17* (5) None of these

18 - 22:

Digits : 9 2 1 7 5 3 6 4 8

Letters : B V M L D P A F R

Conditions for coding the group of digits:-

- I. If the first as well as the last digits are even, both are to be coded by the code for the first digit.
- II. If the first as well as the last digits are odd, both are to be coded by the code for the last digit.

18. 397416

- (1) PBLFMP (2) ABLFMA (3) PVLfMA
(4) PBDfMA (5) None of these

19. 562183

- (1) PAVMRP (2) DAVMRD (3) PAVMRD
(4) DAVMRP (5) None of these

20. 734192

- (1) DPFMBV (2) LPAMBV (3) LPFMVB
(4) LPFMBV (5) None of these

21. 812354

- (1) RLVPDF (2) FMVPDF (3) RMVPDR
(4) RMVADF (5) None of these

22. 627851

- (1) PULRDM (2) AVL RDM (3) AUL RDM
(4) ABL RDM (5) None of these

23 - 30:

Letter : B M K A T R E U N H F I W P

Digit/Symbol : 7 % 5 © 6 9 8 2 @ * \$ 3 * 4

Conditions :

- (i) If the first letter is a vowel and the last letter is a consonant, both are to be coded as the code for the vowel.
- (ii) If the first letter is a consonant and the last letter is a vowel, codes for these two are to be interchanged.
- (iii) If both the first and the last letters are consonants, both are to be coded as the code for the last letter.

Now based on the above, find out the coded form of the letter groups given in each question.

23. WDEF

- (1) *@3*8# (2) #@3*8# (3) #@3*89
(4) #3*8# (5) None of these

24. MATRBW

- (1) %©6973 (2) 3©6973 (3) %©697%
(4) 3©697% (5) None of these

25. EDPKTA

- (1) 8*456© (2) ©*4568 (3) -8*4569
(4) 8*546© (5) None of these

26. ABUHFI

- (1) ©217# \$ (2) ©721#© (3) \$721# \$
(4) ©72#1\$ (5) None of these

27. WPTMBI

- (1) \$46%73 (2) 346%7\$ (3) 346%73
(4) \$46%7\$ (5) None of these

28. FHITWU

- (1) #1\$63# (2) 21\$632 (3) #1#632
(4) 21\$63# (5) None of these

29. HUDBRE

- (1) 127*98 (2) 12*798 (3) 82*791
(4) 8*2791 (5) None of these

30. IMPNWK

- (1) 5%4@3\$ (2) \$%4@35 (3) \$%4@3\$
(4) 5%4@35 (5) None of these

31 - 36:

Letter : D L E G Z K R U B W F H I A P

Digit/Symbol : 4 8 \$ 1 # 5 7 © 2 6 % * 3 9 @

Conditions:

- (i) If the first letter is a vowel and the last is a consonant, both are to be coded as the code of the consonant.
- (ii) If both first and the last letters are consonants, both are to be coded as 'δ'.
- (iii) If first letter is a consonant and last is a vowel, the codes for first and last letters are to be interchanged.

31. ELBGPU

- (1) \$821@© (2) ©821@\$ (3) \$812©@
(4) \$812@ (5) None of these

32. UHRKLZ

- (1) ©*758© (2) ©*758# (3) #*758#
(4) #*758© (5) None of these

33. BFIDWE

- (1) 2%346\$ (2) %3426\$ (3) \$%3426
(4) \$2%634 (5) None of these

34. WKGLBA

- (1) 951862 (2) 651829 (3) 651892
(4) 951826 (5) None of these

35. ABWUPF

- (1) %26©@% (2) %26©@9 (3) 926©@%
(4) %269@ (5) None of these

36. ZEFHIR

- (1) # \$ % * 37 (2) δ \$ % * 3 δ (3) 7 \$ % * 3 #
(4) # % \$ * 37 (5) None of these

Directions (37 - 40): In certain code language 0 (zero) is coded as □ and 1 is coded as •. Numbers do not have any other sign and any number above 1 is written by using either of the two symbols. If the value of 1 is doubled, it itself moves left by one place. In this way-

0 is written as □

1 is written as •

2 is written as • □

3 is written as • •

4 is written as • □ and this continues.

37. If • • • is multiplied with • • then the product is -

(1) • • • • • (2) • • • • • (3) • • • • •

(4) • • • • • (5) • • • • •

38. How can we code 20% of 45.

(1) • • • • • (2) • • • • • (3) • • • • •

(4) • • • • • (5) • • • • •

39. How can be code 7 in this code language?

(1) • • • • • • • (2) • • • • • • • (3) • • • • •

(4) • • • • • (5) • • • • •

40. If • • □ is added to • □ • then the sum is-

(1) • • • • • (2) • • • • • (3) • • • • •

(4) • • • • • (5) • • • • •

Answer with Explanations:

1. 1; T E R M I N A L
 | -1 | -1 | -1 | -1 | +1 | +1 | +1 | +1
 S D Q L J O B M

Similarly,

C R E D I B L E
 | -1 | -1 | -1 | -1 | +1 | +1 | +1 | +1
 B Q D C J C M F

2. 4; U A B O U R
 | -1 | +1 | -1 | +1 | -1 | +1
 K B A P T S

Similarly,

C A N D I D
 | -1 | +1 | -1 | +1 | -1 | +1
 B B M E H E

3. 1; Since,

CO NS UM ER
 ER UM NS CO

Similarly,

TR IA NG LE
 LE NG IA TR

4. 4;

BREAKDOWN NWODKAERB

Similarly,

TRIANGLES SELGNAIRT

5. 1; B R E A K
 | | | | |
 5 1 3 4 2

and,

K I T E
 | | | |
 2 7 9 6

Therefore,

R I B
 | | |
 1 7 5

6. 1; S P R I N G

| | | | |
 # 2 % @ 4 =

and,

G O N E
 | | | |
 = 7 4 0

Therefore,

S I G N
 | | | |
 # @ = 4

7. 2; F I G H T

| | | | |
3 9 % 0 4

and,

T E A R S

| | | | |
4 5 8 0 H

Similarly,

S T A G E

| | | | |
H 4 8 % 5

8. 4; Tree is very beautiful

$\Rightarrow$ ka na da ta... (i)

This is strong tree

$\Rightarrow$ na pa sa ka... (ii)

$\therefore$ is $\Rightarrow$ na / ka

tree $\Rightarrow$ na / ka

Clearly,

code for 'beautiful' cannot be found.

9. 4; si po re $\Rightarrow$ book is thick..... (i)

ti na re $\Rightarrow$ bag is heavy (ii)

ka si $\Rightarrow$ interesting book (iii)

de ti $\Rightarrow$ that bag (iv)

According to equation (i) and (ii), is = re

According to equation (ii) and (iv), bag = ti

So, that = de

According to equation (i) and (iii), book = si

So, Interesting = ka

Clearly, code for 'that is interesting' will be 'de re ka'.

10. 5; The colour of milk is white. But here white is called brown.

11. 4; The colour of milk is white. But here white is called yellow.

12. 1

13. 5; (C@67%5)

14. 4 15. 2 16. 1 17. 3 18. 5 19. 1

20. 4 21. 3 22. 2 23. 2 24. 2 25. 1

26. 5 27. 1 28. 4 29. 3 30. 8 31. 1

32. 3 33. 5 34. 4 35. 1 36. 2

37. 1; $*** \Rightarrow (4 + 2 + 1) = 7$

$** \Rightarrow (2 + 1) = 3$

$(*) \Rightarrow (1) = 1$

$= (16 + 0 + 4 + 0 + 1)$

$= 21$

38. 3; 45 dk 20% = 9

$= (8 + 0 + 0 + 1) = ****$

39. 5; $7 = 4 + 2 + 1 = ***$

40. 2; $(***) + (****)$

$(4 + 2 + 0) + (8 + 0 + 2 + 1)$

$= 6 + 11 = 17$

$= (16 + 0 + 0 + 0 + 1)$

$= *****$

5

PROBLEMS BASED ON ENGLISH ALPHABET

In the alphabet series the position of Alphabets can be explained in a number of ways.

To solve the problems in this chapter we should be well versed with the position of alphabets from the beginning as well as from the end.

For eg:

Position From Left: (1, 2, 26)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

(26.....1) Position From Right

Some important facts to solve the problems based on the Alphabet series:-

1. A → Z = English alphabet series
2. Z → A = Reverse order of English alphabets
3. A → M = First half of English alphabet
4. M → A = Reverse order of first half of English alphabet series
5. N → Z = Second half of English alphabets.
6. Z → N = Reverse order of second half of English alphabets.
7. Important facts on 'left-right' position of English alphabets.

ABCDEFGHIJKLMNOPQRSTUVWXYZ

(Left) → (Right)

(a) From your left means we have to count from left to right.

For eg: Which is the 10th alphabet from the left in the English alphabet series?

A B C D E F G H I J K L Z

10th letter from the left →

Ans. = J

(b) From your right means have to count from right to left.

For eg: Which is the 10th alphabet from the right in the English alphabet series?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

10th letter from the right ←

Ans. = Q

8. In the alphabet series for any particular alphabet if we are asked, towards left it implies that we have to count from right to left or from Z to A and towards right it implies that we have to count from left to right or from A to Z.

For eg:

(a) Which alphabet is adjacent to the alphabet 'P' towards left?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

'O' is the alphabet which is towards the left of P.

(b) In the Alphabet series which letter will be adjacent to right of 'P'?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

'Q' will be the alphabet to the right of 'P'.

9. Important facts related to the word 'to' and 'from':

Meaning of 'to' – Counting excluding the related Alphabet

Meaning of 'from' – Counting including the related Alphabet

For eg:- 5th alphabet to the left of 'T' = ?

M N O P Q R S T Z

5 4 3 2 1

Excluding T

Ans. = O

5th Alphabet from the right of 'J' = ?

J K L M N O

1 2 3 4 5

Including J

Ans. = N

- * 10. Some basic questions based on English alphabet series:

For eg. 1. Which will be 7th letter to the right of the 8th letter from left in English alphabet?

- (1) N (2) P (3) B
(4) O (5) None of these

Sol.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

8th letter from the left → 7th letter to its right →

So, 8th letter from the left is 'H' and 7th letter to its right is 'O'.

Ans : (4)

For eg. 2. Which will be the 5th letter to the right of 10th letter from the right in English alphabet series?

- (1) T (2) V (3) L
(4) M (5) None of these

Sol.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

10th letter from the right
5th letter to the right

Therefore answer is 'V'.

Ans : (2)

For eg. 3. Which is the 10th letter to the right of the 8th letter from the left in the reverse order of alphabet series?

- (1) H (2) I (3) J
(4) B (5) None of these

Sol.

Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

8th letter from the left → 10th letter to the right →

Therefore answer is 'I'.

Ans : (2)

For eg. 4. Which letter will be between the 9th letter from the left and 12th letter from the right?

- (1) K (2) L (3) M
(4) N (5) None of these

Sol.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

9th letter from the left → Middle ← 12th letter from the right

Therefore the Answer is 'L'. **Ans : (2)**

11. Today pattern of questions is changing. Instead of English alphabets questions, the

questions based on symbols / signs / letters are more popular these days. To solve these kind of problems we must strengthen our base which is alphabet series.

For eg. Following questions are based on alphabet number and symbols.

A8B6# 7HU%3 \$FVR21 @41 WE9 © L5

- (a) Which of the following element is 7th to the right of 15th element from the right?

- (1) 4 (2) 1 (3) 1
(4) W (5) None of these

A8B6# 7HU%3 \$FVR21 @41 WE9 © L5

7th letter to the right
15th letter from the right

Here, we have to look for $(15 - 7) = 8^{\text{th}}$ element from the right end.

Therefore, Answer is '4'.

Ans : (1)

- (b) If all the symbols are removed from the series then 8th element from the left will be?

- (1) F (2) \$ (3) U
(4) 3 (5) None of these

Sol. After removal of symbols from the above series 8th element from the left will be 3.

A 8 B 6 7 H U 3 F V R 2 1 4 1 W E 9 L 5

8th element from the left

Ans : (4)

12. Apart from the above given questions some more question based on alphabet series are asked.

For eg.

- (a) How many pairs of letters are there in the word MISTAKE which have as many letters between them as in the English alphabet?

- (1) One (2) Two (3) Three
(4) More than four (5) None of these

Sol. M I S T A K E

□

Therefore, the pair will be ST. **Ans : (1)**

- (b) How many meaningful words can be formed from the word ESDO by using these alphabets once?

- (1) None (2) One (3) Two
(4) Three (5) None of these

Sol. DOES

DOSE

Ans : (3)

- (c) If the alphabets in the word 'FLYING' are arranged according to the alphabet series, how many alphabets will remain at the same position?

(1) None (2) Three (3) One
(4) Two (5) None of these

Sol.

F	L	Y	I	N	G
F	G	I	L	N	Y

Ans : (4)

- (d) If first, fourth, eighth and eleventh letters of the word INTERMEDIATE are used only once, then how many meaningful words can be formed?

(1) One (2) Two (3) Three
(4) More than three (5) None

Sol. First, fourth, eighth and eleventh letters are I, E, D and T. Meaningful words formed are:- EDIT, TIDE, DIET, TIED.

Ans : (4)

- (e) If the below given words are arranged according to their position in the dictionary, then which word will be at second position?

(1) delete (2) defer (3) demean
(4) delirium (5) delude

Sol. After arranging the words according to their position in the dictionary, the word at second place will be 'delete'.

defer-delete-delirium-

1 2

Therefore Answer is delete: **Ans : (4)**

- (f) In the question given below some alphabets along with their numeral order are given. Which of the given options forms a meaningful word?

N	R	O	C	T	A
1	2	3	4	5	6

(1) 1, 6, 2, 4, 3, 5
(2) 2, 3, 5, 4, 6, 1
(3) 4, 6, 2, 5, 3, 1
(4) 6, 5, 2, 3, 1, 4
(5) None of these

Sol.

C	A	R	T	O	N
4	6	2	5	3	1

Ans : (3)

Exercise:

1. How many such pairs of letters are there in the word CREATION each of which has as many letters between them in the word as in the English alphabet?

(1) One (2) Two (3) Three
(4) Four (5) None of these

2. How many such pairs are letters are there in the word OVERWHELM each of which has as many letters between them in the word as in the English alphabet?

(1) None (2) One (3) Two
(4) Three (5) More than three

3. How many such letters are there in the word BEACON each of which is as far away from the beginning in the word as when they are arranged in alphabetical order?

(1) None (2) One (3) Two
(4) Three (5) More than three

4. How many such letters are there in the word DECLARATION each of which is as far away from the beginning of the word as in the English alphabet?

(1) One (2) Two (3) Three
(4) Four (5) None of these

5. How many meaningful words can be formed by using each letter only once in each word after changing each of the consonants of the word SEAL to the next letter of the English alphabet and keeping the vowels unchanged?

(1) None (2) One (3) Two
(4) Three (5) More than three

6. How many meaningful English words can be made with the letters VLEI using each letter only once in each word?

(1) None (2) One (3) Two
(4) Three (5) More than three

Directions (7 - 11): Study the following information carefully and answer the questions given below:

MKKIDNETTQOBFHAAAGTUUXWLSRI
Each letter gets a numerical value based on their position in the above arrangement starting from 1 for M and so on.

7. The value of which of the following consonants when added to that of the vowel, which follows immediately amounts to 11?

(1) H (2) R (3) K
(4) N (5) None of these

8. What is the sum of the values of the group of letters ARM?
 (1) 34 (2) 33 (3) 35
 (4) 32 (5) None of these
9. The sum of values of OB is exactly equal to which of the following?
 (1) U (2) X (3) K
 (4) N (5) None of these
10. Four of the following five are alike in a certain way based on the above arrangement and form a group. Which is the one that does not belong to that group?
 (1) TTQ (2) UUT (3) KKI
 (4) XWL (5) WLS
11. Value of A is exactly equal to the total value of which of the following pairs?
 (a) DQ (b) QE (c) MH
 (1) Only (a) (2) Only (b) (3) Only (c)
 (4) Both (a) and (b) (5) None of these
16. Which of the following is exactly in the middle between 7 and A?
 (1) P (2) N (3) 4
 (4) 1 (5) None of these
17. Which of the following is third to the left of the ninth from the right end?
 (1) N (2) K (3) 1
 (4) P (5) None of these
18. What should come next in the following letter series?
 A C E G I K M O B D F H J L N A C E G I K
 M B D F H J L A
 (1) B (2) C (3) F
 (4) D (5) None of these
19. What should come next in the following letter sequence?
 A A B A B C A B C D A B C D E A B C D E
 F A B
 (1) D (2) E (3) G
 (4) C (5) F

Directions (12 - 14): The letters in the word PROTEIN are rearranged in such a way that the consonants are arranged alphabetically and then the Vowels are arranged alphabetically.

12. How many letters will be there between R and I after the rearrangement?
 (1) None (2) One (3) Two
 (4) Three (5) More than three
13. Which of the following will be the third from right after the rearrangement?
 (1) T (2) O (3) R
 (4) I (5) None of these
14. Which of the following will be third from left after the rearrangement?
 (1) R (2) N (3) O
 (4) P (5) None of these
20. What should come next in the following letter series?
 A Z A B Y A B C X A B C D W A B C D E V
 A B C D E
 (1) U (2) T (3) A
 (4) G (5) None of these
21. If it is possible to make only one meaningful word with the second, the third, the sixth and the eighth letters of the word FRAGMENT using each letter only once, which of the following will be the third letter of that word? If no such word can be formed, give 'X' as the answer and if more than one such word can be formed, give 'Y' as the answer.
 (1) A (2) E (3) T
 (4) X (5) Y

Directions (15 - 17): Study the following arrangement carefully and answer the questions given below?

M2RDEK57BJI4NP8AW9V1UF3H6

15. Which of the following is the fourth to the right of the tenth from the left end?
 (1) P (2) N (3) K
 (4) 4 (5) None of these
22. How many meaningful English words can be formed with the letters of the word 'STOP' each using only once in a word but in different sequence, starting with the letter P?
 (1) None (2) Two (3) One
 (4) Three (5) More than three

23. If it is possible to make a meaningful word with the first, the third, the seventh and the eleventh letters of the word OMNIPRESENCE using each letter only once, which of the following will be the second letter of that word? If more than one such words can be made, give 'M' as the answer and if no such word can be made, give 'R' as the answer.
- (1) N (2) C (3) E
(4) M (5) R
24. If it is possible to make a meaningful word with the third, sixth, ninth, and twelfth letters of the word ELECTRIFICATION, write the last letter of the word so formed as the answer. If no such word can be formed mark 'N' as your answer and if more than one word can be formed mark 'D' as your answer.
- (1) R (2) E (3) T
(4) D (5) N
25. How many meaningful English words can be made with the letters RBAE, using each letter only once in each word?
- (1) None (2) One (3) Two
(4) Three (5) More than three
26. How many such pairs of letters are there in the word CLEARING each of which has as many letters between them in the word as there are in English alphabet?
- (1) None (2) One (3) Two
(4) Three (5) None of these
27. Each vowel in the word JOURNEY is replaced by the previous letter in the English alphabet and each consonant is replaced by the next letter in the English alphabet, and then the substituted letters are arranged in alphabetical order. Which of the following will be the fifth from the left end?
- (1) D (2) K (3) O
(4) T (5) None of these
28. 'RT' is related to 'VX' and 'BD' is related to 'FH', in the same way as 'KM' is related to—
- (1) NP (2) OR (3) OQ
(4) PR (5) None of these
29. 'JM' is related to 'PS' in the same way as 'BE' is related to —?
- (1) HJ (2) HK (3) IL
(4) JM (5) None of these
30. If it is possible to make only one meaningful English word with the first, the sixth, the eighth and the ninth letters of the word HOARDINGS, which of the following will be the third letter of that word? If no such word can be made, give 'X' as the answer and if more than one such word can be made, give 'Y' as the answer.
- (1) G (2) I (3) S
(4) X (5) Y
- Directions (31 - 36): Study the following arrangement carefully and answer the questions given below:**
- B 2 M E J % R 5 @ N D I P 4 © T 3 9 F U 1 \$ 6 H A A T * G Q #**
31. If all the symbols in the above arrangement are dropped, which of the following will be the twelfth from the right end?
- (1) 4 (2) 3 (3) 9
(4) F (5) None of these
32. Which of the following is the fifth to the left of the eighteenth from the left end of the above arrangement?
- (1) % (2) A (3) D
(4) 3 (5) None of these
33. How many such vowels are there in the above arrangement, each of which is immediately preceded by a number and immediately followed by a consonant?
- (1) None (2) One (3) Two
(4) Three (5) Four
34. How many such consonants are there in the above arrangement, each of which is immediately preceded by a number and immediately followed by a letter?
- (1) None (2) One (3) Two
(4) Three (5) More than three
35. Which of the following is the ninth to the right of the twentieth from the right end of the above arrangement?
- (1) D (2) @ (3) 1
(4) 6 (5) None of these

36. Four of the following five are alike in a certain way based on their positions in the above arrangement and so form a group. Which is the one that **does not** belong to that group?

(1) 5 N I (2) 9 U \$ (3) H A *
(4) 7 G # (5) D P T

Directions (37 - 40): Study the following arrangement carefully and answer the questions given below:

3 D K \$ P 2 7 # @ 4 J T H 9 * F M R 1 5 % ? 6 8

37. How many such numbers are there in the above arrangement, each of which is immediately followed by a symbol and preceded by a letter?
- (1) None (2) Three (3) Two
(4) One (5) None of these
38. If DP : 65 :: 7 @ : ?
- (1) 1M (2) RF (3) 1F
(4) RM (5) None of these
39. How many such symbols are there in the above arrangement, each of which is immediately followed by a letter but not preceded by a letter?
- (1) One (2) Two (3) Three
(4) Zero (5) None of these
40. Which of the following will come in the place of the question mark (?) according to the above arrangement?

KPD, 7@2, ?, *M9

(1) 4T@ (2) JH@ (3) 4T#
(4) JH4 (5) None of these

Answers with Explanation:-

1. 2; C R E A T I O N

2. 5; O V E R W H E L M

3. 1; B E A C O N
A B C E N O

4. 1; D E C L A R A T I O N
A A C D E I L N O R T

5. 5; S E A L
T E A M

Meaningful words: MATE, MEAT, TAME, TEAM

6. 5; LIVE, VEIL, VILE, EVIL

7 - 11;

M K K I D N E T T Q O B F
1 2 3 4 5 6 7 8 9 10 11 12 13
H A A G T U U X W L S R I
14 15 16 17 18 19 20 21 22 23 24 25 26

7. 5; There is no such consonant.

8. 5; A R M
↓ ↓ ↓
15 + 25 + 1 = 41

9. 5; O B
11 + 12 = 23

10. 2; Except UUT, in all others letters are consecutive element from left to right.

11. 5; (a) D + Q = 5 + 10 = 15
(b) M + H = 13 + 2 = 15

12-14: P R O T E I N
N P R T E I O

12. 3; There are only two letters between R and I.

13. 5; E

14. 1

15. 1; Fourth to the right of the tenth from the left end implies (10 + 4 =) 14th element from the left end. Hence, the required element is 'P'.

16. 3; 7 B J I 4 N P 8 A
↑ ↑ ↑

Obviously, the required element is '4'.

17. 4; Note that third to the left of the ninth element from the right end implies (9 + 3 =) 12th element from the right end. Hence, the required element is 'P'.

18. 2; A C E G I K M O B D F H J L N / A C E G I
K M B D F H J L / A C

19. 4; A, AB, ABC, ABCD, ABCDE, ABCDEF, ABC

20. 5; AZ/ABY/ABCX/ABCDW/ABCDEV/
A B C D E F U

Thus F will come next in the series.

21. 5; Here specified letters are R, A, E and T

The meaningful words formed are:
TEAR & RATE

22. 2; POST and POTS

23. 4; CONE and ONCE

24. 4; RITE, TIER, TIRE

25. 3; BARE and BEAR

26.3; C L E A R I N G

There are only two such pairs.

27.5; J O U R N E Y
K N T S O D Z
D K N O S T Z

Now, in the above arrangement the 5th element from the left end is 'S'.

28.3;

+4 +4

R T : V X
18 20 : 22 24

Similarly,

+4 +4

K M : O Q
10 13 : 15 17

29.2;

+6 +6

J M : P S
11 13 : 16 19

Similarly,

+6 +6

B E : H K
2 5 : 8 11

30.1; The specified letters are H, I, G and using this letters we get the word SIGH.

31.2; After removing all the symbols
B 2 M E J R 5 N D I P 4 T 3 9 F U 1 6 M
J A 7 G Q

So, 3 is the twelfth element from the right.

32.5; 5th to the left of 18th element from the left end implies $(18 - 5) = 13^{\text{th}}$ element from the left end. Hence, the required element is 'P'.

33.1; Here, we have to look for Number - Vowel - Consonant sequence.

There is no such sequence in the given arrangement.

34.4; Here, we have to look for

Number - Consonant - Letter sequence.
B 2 M E J % R 5 @ N D I P 4 @ T 3 9 F U 1
\$ 6 H J A T * G Q #

There are only three such sequences.

35.3; Note that 9th element to the right of 20th element from the right end implies $(20 - 9) = 11^{\text{th}}$ element from the right end. Hence, the required element is '1'.

36.5; (1) 5 - N - I
(2) 9 - U - \$
(3) H - A - *
(4) 7 - G - #
(5) D - P - - T

Obviously, option (5) is different from others.

37.4; Here, we have to look for Letter-Number-Symbol sequence.

3 D K \$ P 2 7 # @ 4 J T H 9 * F M R 1 5 %
? 6 8

38.2; DP : 65 : 7@ : RF

Here D and P are 2nd and 5th elements respectively from the left end, whereas 6 and 5 are 2nd and 5th elements respectively from the right end.

Similarly,

7 and @ are 7th and 9th elements respectively from the left end, whereas R and F are 7th and 9th elements respectively from the right end.

39.1; 3 D K \$ P 2 7 # @ 4 J T H 9 * F M R 1 5 %
? 6 8

There is only one such symbol.

40.4;

+4 +4 +4

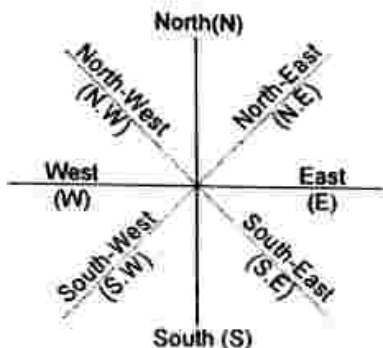
K P D 7 @ 2 J H 4 * M 9

+4 +4 +4

DIRECTION TEST

In this chapter we will deal with the problems related to directions. In the questions a problem based on directions is given and on the basis of the information given in the problem we have to decipher the resultant direction or the distance travelled following certain rules.

The following diagram illustrates the basic directions.



Note that one should be aware of basic geometric rule, such as Pythagoras Theorem before proceeding further.

Pythagoras Theorem $\Rightarrow AC^2 = AB^2 + BC^2$

$$\therefore AC = \sqrt{AB^2 + BC^2}$$



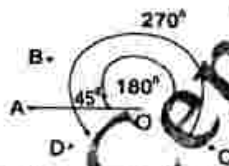
Now, let's see some examples for better understanding

1. A man is facing West. He turns 45° in the clockwise direction and then another 180° in the same direction and then 270° in the anti-clockwise direction. In which direction is he facing now?

- (1) South (2) North-West (3) West
(4) South-West (5) None of these

Sol. (4): Clearly, the man initially faces the direction OA. On moving 45° clockwise, he faces the direction OB.

On further moving 180° clockwise, he faces the direction OC. Finally, on moving 270° anti-clockwise, he faces the direction OD, which is South-West.



(45° CW + 180° CW + 270° ACW = 45° ACW from the original position)

Note: CW- Clockwise, ACW- Anti-clockwise

2. A man is looking for his friend. He went 90 m in the East before turning to his right. He went 20 m before turning to his right again and goes further to look for his friend at his uncle's place 30 m from this point. His friend was not there. From there, he went 100 m to North before meeting his friend in a street. How far did the man meet his friend from the starting point?

- (1) 80 m (2) 100 m (3) 140 m
(4) 260 m (5) None of these

Sol. (2): Clearly, the man moves from A, 90 m Eastwards upto B, then turns right and moves 20 m upto C, then turns right and moves 30 m upto D. Finally, he turns right and moves 100 m upto E.

Clearly,

$$AB = 90 \text{ m}, BF = CD = 30 \text{ m}$$

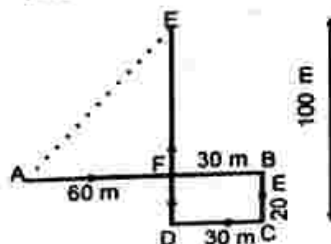
$$\text{So, } AF = AB - BF = 60 \text{ m.}$$

$$\text{Also, } DE = 100 \text{ m, } DF = BC = 20 \text{ m.}$$

$$\text{So, } EF = DE - DF = 80 \text{ m.}$$

$\therefore$ His distance from starting point

$$AE = \sqrt{AF^2 + EF^2}$$

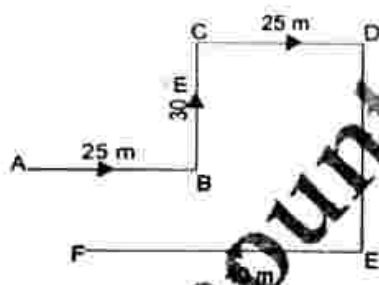


$$= \sqrt{(60)^2 + (80)^2} = \sqrt{3600 + 6400} = \sqrt{10000} = 100 \text{ m}$$

3. Chandan faces towards North. Turning to his right, he walks 25 m. He then turns to his left and walks 30 m. Next, he moves 25 m after turning to his right. He then turns to his right again and walks 55 m. Finally, he turns to the right and moves 40 m. In which direction is he now from his starting point?

- (1) South-West (2) South
(3) North-West (4) South-East
(5) None of these

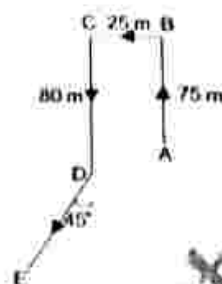
Sol. (4): Chandan turns towards right from North direction. So, he walks 25 m towards East upto B, turns left and moves 30 m upto C, turns right and goes 25 m upto D. At D, he turns to right towards the South and walks 55 m upto E. He again turns to right and walks 40 m upto F, which is his final position. F is to the South-East of A. So, he is to the South-East from his starting point.



4. Deepika moved a distance of 75 m towards the North. She then turned to the left and walking for about 25 m, turned left again and walked 80 m. Finally, she turned to the right at an angle of 45° . In which direction was she facing now?

- (1) North-East (2) North-West (3) South
(4) South-West (5) None of these

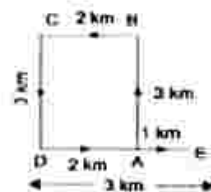
Sol. (4): Deepika started from A, moved 75 m upto B, turned left and walked 25 m upto C. She then turned left again and moved 80 m upto D. Turning to the right at an angle of 45° , she was finally moving in the direction DE i.e., South-West.



5. Satish walks a distance of 5 km towards North, then turns to his left and walks for 2 km. He again turns left and walks for 3 km. At this point he turns to his left again and walks for 3 km. How many kilometres is he from the starting point?

- (1) 1 km (2) 2 km (3) 3 km (4) 5 km

Sol. (1): The movements of Satish are as shown in Fig. (A to B, B to C, C to D and D to E). Clearly, $AD = BC = 2 \text{ km}$.



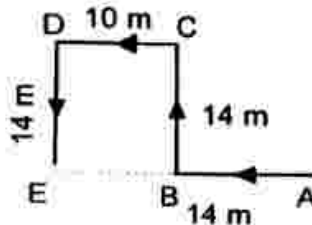
So, required distance = $AE = (DE - AD) = (3 - 2) \text{ km} = 1 \text{ km}$

6. Namita walks 14 m towards West, then turns to her right and walks 14 m and then turns to her left and walks 10 m. Again turning to her left she walks 14 m. What is the shortest distance (in metres) between her starting point and the present position?

- (1) 10 m (2) 24 m (3) 28 m (4) 38 m

Sol. (2): The movements of Namita are as shown in (A to B, B to C, C to D and D to E).

Clearly, Namita's distance from his initial position = $AE = (AB + BE) = (AB + CD) = (14 + 10) \text{ m} = 24 \text{ m}$.

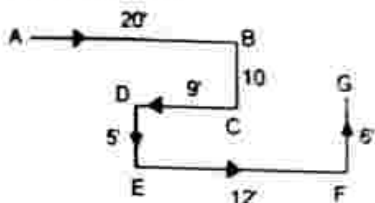


7. A rat runs 20' towards East and turns to right, runs 10' and turns to right, runs 9' and again turns to left, runs 5' and then turns to left, runs 12' and finally turns to left and runs 6'. Now, in which direction is the rat facing?

(1) East (2) West (3) North
(4) South (5) None of these

Sol. (3): The movements of the rat from A to G are as shown in

Clearly, it is finally facing the direction FG i.e. North.



8. Maya starts from point T, walks straight to point U which is 4 ft away. She turns left at 90° and walks to W which is 4 ft away, turns 90° right and goes 3 ft to P, turns 90° right and walks 1 ft to Q, turns left at 90° and goes to V, which is 1 ft away and once again turns 90° right and goes to R, 3 ft away. What is the distance between T and R?

(1) 4 ft (2) 5 ft (3) 7 ft (4) 8 ft

Sol. (4): The movements of Maya from T to R are as shown in

$$\begin{aligned} \therefore \text{Distance between T and R} \\ &= TR = TU + UR = TU + PQ + QV \\ &= (4 + 3 + 1) \text{ ft} = 8 \text{ ft} \end{aligned}$$

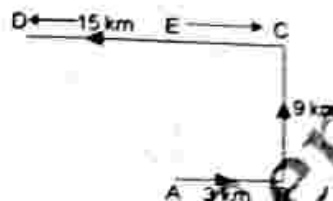


9. A person starts from a point A and travels 3 km Eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B

and reaches his destination D. The shortest distance between the starting point and the destination is

(1) 12 km (2) 15 km (3) 16 km (4) 18 km

Sol. (2): The movements of the person are as shown in



Clearly, $AB = 3 \text{ km}$.

$$BC = 3 AB = (3 \times 3) \text{ km} = 9 \text{ km},$$

$$CD = 5 AB = (5 \times 3) \text{ km} = 15 \text{ km}.$$

Draw $AE \perp CD$.

Then, $CE = AB = 3 \text{ km}$ and $AE = BC = 9 \text{ km}$.

$$DE = (CD - CE) = (15 - 3) \text{ km} = 12 \text{ km}.$$

$$\text{In } \triangle AED, AD^2 = AE^2 + DE^2$$

$$AD^2 = 9^2 + 12^2$$

$$AD^2 = 81 + 144$$

$$AD^2 = 225$$

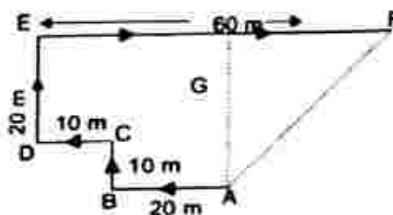
$$AD = \sqrt{225} = 15$$

Minimum distance = 15 km.

10. I am facing South. I turn right and walk 20 m. Then I turn right again and walk 10 m. Then I turn left and walk 10 m and then turning right walk 20 m. Then I turn right again and walk 60 m. In which direction am I from the starting point?

(1) North (2) North-West
(3) East (4) North-East

Sol. (4): The movements of the person are from A to F, as shown. Clearly, the final position in F which is to the North-East of the starting point A.



Exercise:

- Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns South and walks 5 km. Then again he turns West and walks 2 km. Finally he turns North and walks 6 km. In which direction is he from the starting point?
(1) South-West (2) South-East
(3) North-West (4) North-East
(5) None of these
- Rana travels 10 km North, turns left and travels 4 km and then again turns right and covers another 5 km. He then turns right and travels another 4 km. How far is he from the point of starting of his journey?
(1) 5 km (2) 4 km (3) 15 km
(4) 10 km (5) None of these
- Ram starts from a point A and walks 6 km North, then turns left and walks 8 km. Then he turns left and walks 12 km up to the point D. In which direction is Ram facing?
(1) North (2) South (3) East
(4) West (5) None of these
- Sita walks 1 km to East, turns right and walks another 1 km and then turns left and walks 2 km and again turning to her left travels 5 km. How far is Sita from her starting point? (Consider the shortest distance)
(1) 8 km (2) 5 km (3) 7 km
(4) 6 km (5) None of these
- Vishal walks 2 km towards South. He then turns right and walks 3 km. He now turns left and walks 5 km. Further, he moves 2 km after turning to the left. In which direction is he facing?
(1) West (2) East (3) North
(4) South (5) None of these
- Kannan walked 10 km towards North. From there he turned back and walked 6 km towards South. Then he walked 3 km towards East. How far was he from the starting point?
(1) 3 km (2) 6 km (3) 7 km
(4) 5 km (5) None of these
- Shashi and Sunil start from O (Zero) and walked in opposite directions. Shashi covered 7 km towards West to A and Sunil walked to East 5 km to B. Then Sunil turned to his left and walked 3 km to D and Shashi walked to her right and walked 3 km to C. How far are they from each other?
(1) 10 km (2) 12 km (3) 14 km
(4) 16 km (5) None of these
- Ram is facing North-West. He turns in clockwise direction by 90° , then 180° in the anti-clockwise direction and turns another 90° in the same direction. In which direction is he facing now?
(1) South-West (2) West (3) South
(4) South-East (5) None of these
- Laxman went 15 km to North, then turned West and covered 10 km. Then he turned South and covered 5 km. Finally turning to East he covered 10 km. In which direction is he from the starting point?
(1) East (2) West (3) North
(4) South (5) None of these
- Amir from a point, walks 4 miles North, turns to his right and walks 2 miles, again turns to his right and walks 2 miles, again turns to his right and walks 2 miles. In which direction would he be now with respect to the starting point?
(1) North (2) South (3) East
(4) West (5) None of these
- Pran and Khan start from their office and walks in opposite direction, each travelling 10 km. Pran then turns left and walks 10 km, while Khan turns right and walks 10 km. How far are they now from each other?
(1) 0 km (2) 5 km (3) 10 km
(4) 20 km (5) None of these
- A taxi driver commenced his journey from a point and drove 10 km towards North and turned to his left and drove another 5 km. After waiting to meet a friend here he turned to his right and continued to drive another 10 km. He has covered a distance of 25 km so far, but in which direction would he be now?
(1) South (2) North (3) East
(4) South-East (5) None of these
- If A stand on his head with his face towards North, in which direction will his left hand point?
(1) North-East (2) North (3) East
(4) North-West (5) None of these

14. A car travelling towards South covers a distance of 8 km, then turns right and runs another 9 km and again turns to the right and stopped. In which direction does it face now?
 (1) South (2) North (3) West
 (4) East (5) None of these
15. A man starts from a point walks 2 km towards North, turns towards his right and walks 2 km, turns right again and walks. In which direction is he going now?
 (1) South (2) South-East
 (3) North (4) West
 (5) None of these
16. Harihar starts walking straight facing South. After walking 30 m he turned to his right, walked 25 m and turned to his left. Again after walking a distance of 10 m he turned to his left. In which direction is he facing now?
 (1) West (2) East
 (3) North-East (4) South-West
 (5) None of these
17. Ashok walked 5 m towards East, took a right turn and walked 10 m and again he took a right turn and walked 15 m. In which direction is he facing now?
 (1) South (2) West (3) North
 (4) South-West (5) None of these
18. Q walked 20 m towards West, took a left turn and walked 20 m. He then took a left turn and walked 20 m and again took a right turn and walked 20 m. How far is Q now from the starting point?
 (1) 40 m (2) 50 m (3) 80 m
 (4) Data inadequate (5) None of these
19. Tom walked 10 miles from point P towards the East. He then took right turn and walked 5 miles and taking another right turn walked again for another 5 miles. In which direction is point P from where Tom is standing now?
 (1) West (2) North-West
 (3) North-East (4) Can't be determined
 (5) None of these
20. Shyam walked 6 m towards East, then took a right turn and walked a distance of 9 m. He then took a left turn and walked a distance of 6 m. How far is he from the starting point?
 (1) 15 m (2) 21 m (3) 18 m
 (4) Can't be determined (5) None of these
21. Prabir started walking towards South. He took a right turn after walking 10 m. He again took a left turn after walking 20 m. In which direction is he facing now?
 (1) South (2) North (3) West
 (4) East (5) Can't be determined
22. Raman starts from point P and walks toward South and stops at point Q. He now takes a right turn followed by a left turn and stops at point R. He finally takes a left turn and stops at point S. If he walks 5 km before taking each turn, towards which direction will Raman have to walk from point S to reach point Q?
 (1) North (2) South (3) West
 (4) East (5) North-West
23. Kunal walked 10 m towards the East, turned right and walked another 15 m. Then he turns left and walks 3 m. He finally takes a left turn and walked 6 m. In which direction is he facing now?
 (1) East (2) North (3) West
 (4) South (5) South-West
24. Ahmed is standing to the West of Amit and North of Rachna. Satish is standing to the West of Rachna but to the South of Samir. Satish is in which direction from Amit?
 (1) West (2) South-West
 (3) South (4) South-East
 (5) None of these
25. Mohan walked 40 m towards North, took a left turn and walked 20 m. He again took a left turn and walked 40 m. How far and in which direction is he from the starting point?
 (1) 20 m East
 (2) 20 m North
 (3) 20 m South
 (4) 100 m South
 (5) None of these
26. Samir was standing facing East. He turned to his right and walked 5 m, again turned to his right and walked 7 m. Then he turned to his left and walked 4 m. In which direction is he facing now?
 (1) North (2) South (3) West
 (4) North-West (5) None of these

27. If M is in the South of B and B is in the West of N, then in which direction is N from M?
 (1) North (2) East
 (3) North-East (4) South-West
 (5) None of these
28. Naveen walks 20 m towards East. He then turns left and walks 10 m. He again turns left and walks 20 m. How far is he from his starting point?
 (1) 10 m (2) 50 m (3) 40 m
 (4) 30 m (5) None of these
29. Mohan starts walking towards East and walked 30 m, then he turned right and walked 50 m and he again turned left and walked 40 m. Again he turned left and walked 50 m. Now, how far is he from his starting point?
 (1) 170 m (2) 70 m (3) 120 m
 (4) 110 m (5) None of these
30. A walks 10 m North, then he turns right and walks 10 m. And then turning left each time, he walks 5 m, 15 m and 15 m respectively. Now, how far is he from his starting point?
 (1) 5 m (2) 10 m (3) 15 m
 (4) 20 m (5) None of these
31. Praveen walked 30 m towards East, then he turned right and walked 20 m. Again he turned right and walked 30 m. How far is he from his starting point?
 (1) 30 m (2) 80 m (3) 50 m
 (4) 20 m (5) None of these
32. Atul walks 20 m towards South. He then turns left and walks 30 m. After that he turns right and walks 10 m. Then again he turns right and walks 40 m. After this he turns right and walks 30 m. Now he stops. Now in which direction is he from his starting point?
 (1) South-West
 (2) West
 (3) North-West
 (4) Starting point
 (5) None of these
33. Amit walked 20 m towards West, turned right and walked 30 m, again he turned right and walked 20 m. How far was he from his starting point?
 (1) 70 m (2) 40 m (3) 30 m
 (4) 50 m (5) None of these
34. Dhanesh walks 50 m East and then he turns to his right and walks 30 m. Now in which direction is he from his starting point?
 (1) South-West (2) North-East
 (3) North-West (4) South-East
 (5) None of these
35. Four persons A, B, C and D are sitting along the different sides of a table. B is sitting towards left of A. C who is facing West, is sitting to the right of D. Who is facing South?
 (1) A (2) B (3) B or D
 (4) Data inadequate (5) None of these
36. Five persons P, Q, R, S and T are sitting around a round table. Q is sitting between T and S. P is not immediate left of S, then who is sitting second to the right of Q?
 (1) P (2) R (3) S
 (4) Data inadequate (5) None of these
37. Q walked 20 m towards West, turned left and walked 20 m, then he turned right and walked 20 m and again turned right and walked 20 m. Now how far is Q from his starting point?
 (1) 40 m (2) 50 m (3) 80 m
 (4) Data inadequate (5) None of these
38. If North-East becomes West and South-East becomes North then what will West become?
 (1) South-East
 (2) North-East
 (3) South
 (4) North-West
 (5) None of these
39. Imagine that you are walking towards South. After sometime you turn left. Then again you turn left. After that you turn right and once again turn to the right. In which direction you are walking now?
 (1) East (2) West (3) South
 (4) North (5) None of these

40. Manish and Rinku starts walking from a same point. Manish goes towards West and covers 4 km, and then he turns right and goes 3 km. Rinku goes towards North and covers 3 km, then turns right and goes 5 km. How far is Manish from the Rinku now?
- (1) 1 km (2) 3 km (3) 9 km
(4) 7 km (5) None of these
41. Sarla says to Suresh that she is going to the North direction to hide, but she went 2 km East from there and then 3 km towards South and again 2 km towards West and then again same distance towards the starting place. Now in which direction is Sarla from her hiding place?
- (1) North (2) South (3) West
(4) East (5) None of these
42. Four friends are sitting along the different sides of a square table. Meena is sitting to the different right of Padma and Beena is sitting to the left of Krishna. Which of the two friends are sitting opposite to each other while Krishna is sitting to the left of Padma?
- (1) Padma and Krishna
(2) Krishna and Beena
(3) Beena and Meena
(4) Meena and Krishna
(5) Padma and Meena
43. Girija, Ishan, Frensis and Hema are sitting on a bench. Hema is sitting ahead and to the immediate left of Frensis. On one side of Ishan Frensis is sitting and to his other side Girija is sitting. Who is sitting to the extreme right?
- (1) Girija (2) Ishan (3) Frensis
(4) Hema (5) None of these
44. 5 books have been kept such that, E is just above A. C is just below the D. A is just above D. B is just below C. Which book is at the bottom?
- (1) A (2) D (3) B
(4) C (5) None of these
45. I am standing on a river shore with my back towards the river. An object in the water flows on its own from my left and goes to my right. River is flowing from West to East, then in which direction am I facing?
- (1) East (2) West (3) North
(4) South (5) None of these
46. My house's door faces the East. Sriman's house is attached to the back wall of my house, whose door is exactly in the opposite direction of my house but it is on the main road. Towards which direction the door of Sriman's house on the other side of the road will face?
- (1) Towards East
(2) Towards West
(3) Towards North
(4) Towards South
(5) Question is not clear
47. Kamala is between Mohan and Suresh. Ramesh is on the immediate left of Suresh and Sohan is on the immediate right of Mohan. All are standing facing North, then who is on the extreme right?
- (1) Mohan (2) Suresh (3) Ramesh
(4) Sohan (5) None of these
48. Ashok went 8 km South and turned West and walked 3 km, again he turned North and walked 5 km. He took a final turn to east and walked 3 km. In which direction was Ashok from the starting point?
- (1) East (2) North (3) West
(4) South (5) None of these

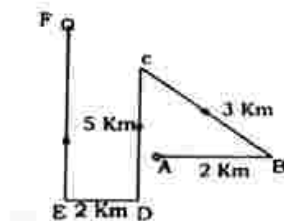
Directions (49 - 50):

Kiran walks 20 m North, she turns right and walks 30 m, then she turns right and walks 35 m, then she turns left and walks 15 m, then she again turns left and walks 15 m. Once again she turns left and walks 15 m.

49. How far is Kiran from her starting point?
- (1) 25 m (2) 15 m (3) 45 m
(4) 30 m (5) None of these
50. In which direction is Kiran facing now?
- (1) East (2) West (3) North
(4) South (5) None of these

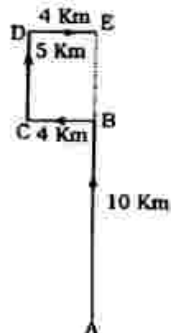
Answer with Explanations

1. 3;



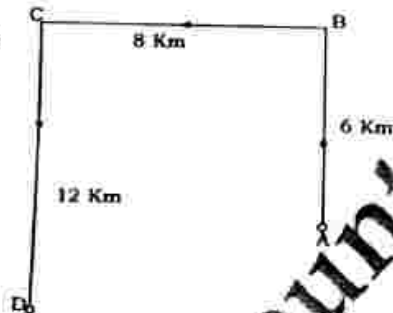
Obviously, F is to the North-West of A.

2. 3;



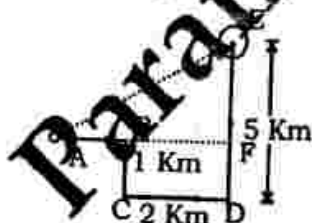
Hence, required distance
 $AE = AB + BE = AB + CD$
 $= 10 + 5 = 15 \text{ Km}$

3. 2;



Obviously, Ram is facing South.

4. 2; We have to find out the distance between the two points S and E.



Here,

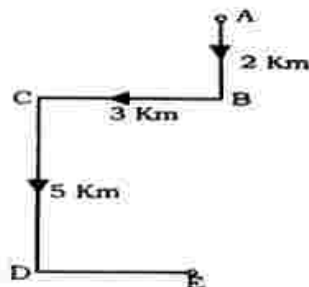
$$EF = DE - FD = 5 - 1 = 4 \text{ Km}$$

$$AF = AB + CD = 1 + 2 = 3 \text{ Km}$$

$$\therefore AE = \sqrt{(AF)^2 + (EF)^2} = \sqrt{3^2 + 4^2}$$

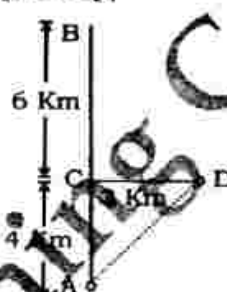
$$= \sqrt{25} = 5 \text{ Km}$$

5. 2;



Vishal is facing East (at the end of the journey)

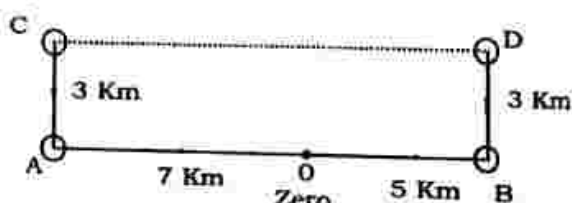
6. 4;



$$AD = \sqrt{(AC)^2 + (CD)^2} = \sqrt{4^2 + 3^2}$$

$$= \sqrt{25} = 5 \text{ Km}$$

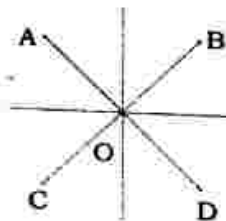
7. 2;



Here, the required distance,
 $CD = AB = 7 + 5 = 12 \text{ Km}$

Note:- CW = Clockwise, ACW = Anti-clockwise

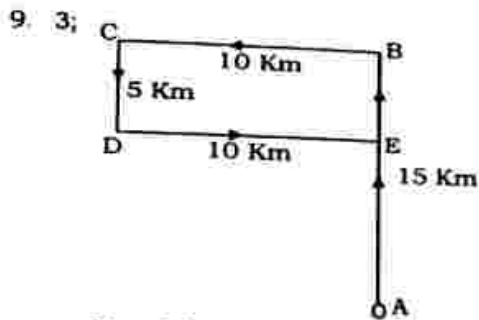
8. 4;



$$90^\circ \text{ CW} + 180^\circ \text{ ACW} + 90^\circ \text{ ACW}$$

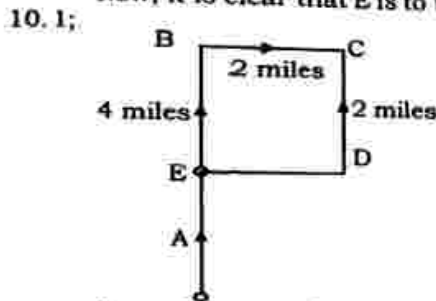
$$= 180^\circ \text{ ACW}$$

from the original position. Thus, we can conclude that Ram is facing point D from the point O. Thus, he is facing South-East.

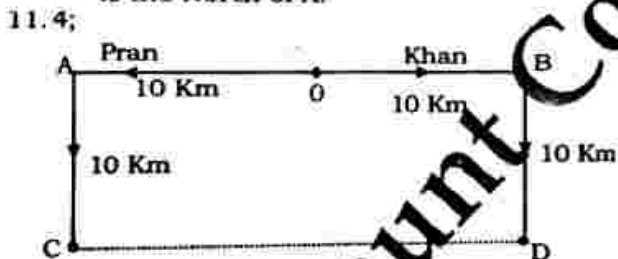


Here A is starting point. E is the final destination.

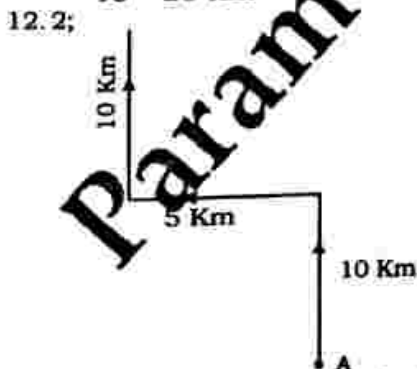
Now, it is clear that E is to the North of A.



Here, A is starting point and E is the final destination. Now it is clear that E is to the North of A.



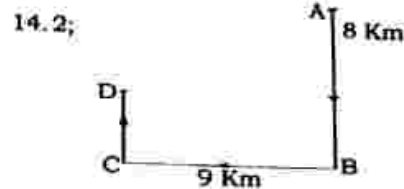
The required distance $CD = AB = 10 + 10 = 20 \text{ Km}$



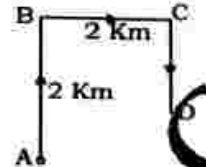
Obviously, the driver is facing North.

13. 3; If A stands on head with his face towards North, his left hand will point towards East whereas his right hand will point

towards West.

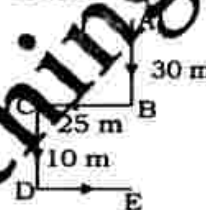


15. 1;



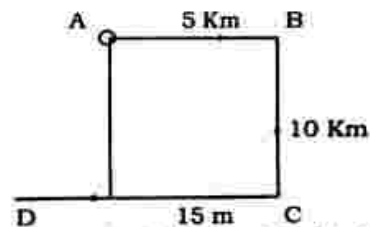
Now, it is obvious that the man is facing South.

16. 2;



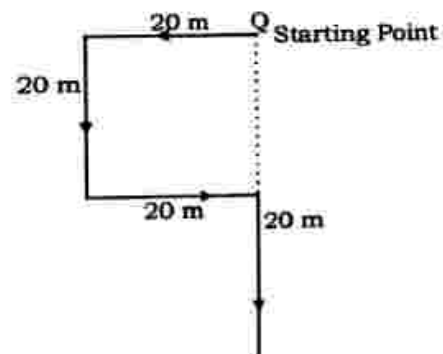
Now, it is obvious that Harihar is facing East.

17. 2;



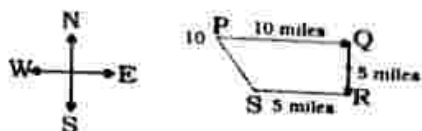
Now, it is clear that Ashok is facing West.

18. 1;



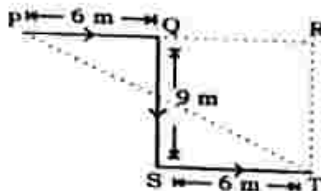
Required distance = $(20 + 20) = 40 \text{ m}$.

19. 2;



It is clear from the diagram that point P is in North-West direction.

20. 1;



In the above figure 'P' is starting point and 'T' is end point.

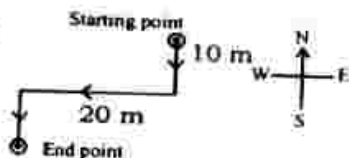
$$\text{Now, } PT^2 = PR^2 + RT^2$$

$$PT = \sqrt{PR^2 + RT^2}$$

$$= \sqrt{12^2 + 9^2} = \sqrt{144 + 81} = \sqrt{225} = 15 \text{ m}$$

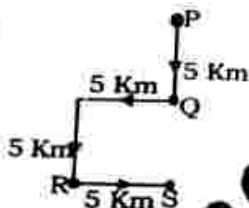
$$[\because PR = PQ + ST \text{ and } RT = QS]$$

21. 1;



From the above figure it is clear that Prabir is facing South.

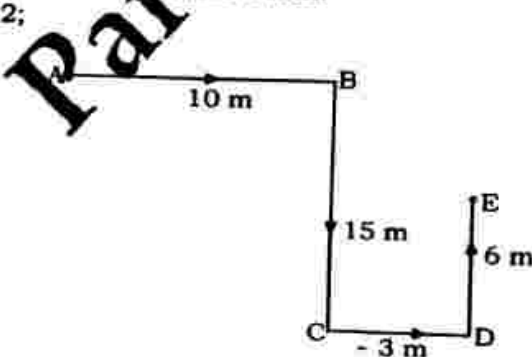
22. 1;



Here, P is starting point whereas S is end point.

In order to reach point Q Raman has to travel towards North.

23. 2;



24. 2;

From the above diagram it is clear that Kunal is facing North.

Ahmed Amit

Satish Rachna

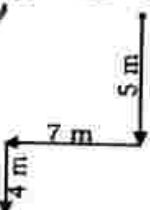
Look at the position of Satish and Amit. It is clear that Satish is to the South-west of Amit.

25. 5; 20 metres, West



Hence, required distance $AB = BC = 20 \text{ m (West)}$

26. 2;



27. 3;

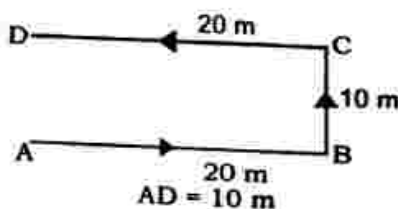
Look at the positions of B, M and N.

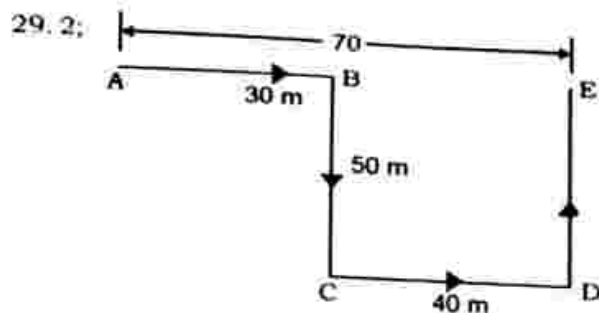
B N

M

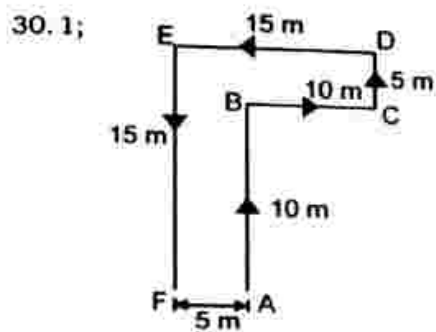
Obviously N is to the North-east of M.

28. 1;

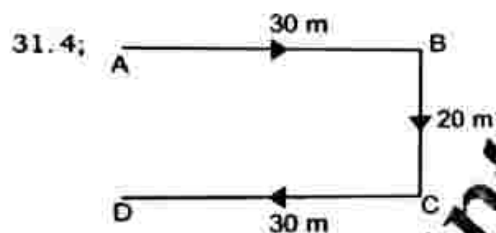




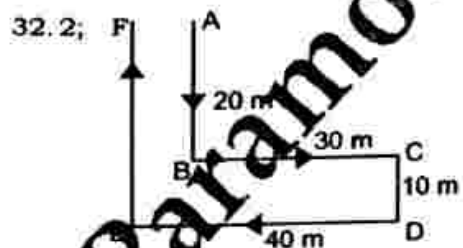
Obviously, $AE = 30 + 40 = 70$ m



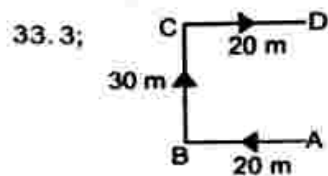
$\therefore AF = 5$ m



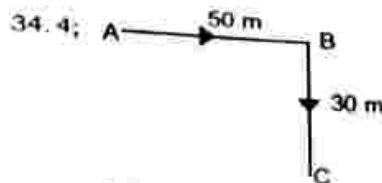
Here, $AD = BC = 20$ m



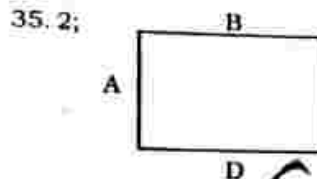
Obviously, F is to the West of A



Obviously, $AD = BC = 30$ m.



Point C is to the South-east of A



It is B who is facing South.

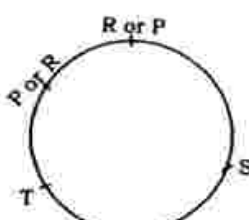
36. 4; P or R

We have information that Q is sitting between P and S. We get two possibilities Case I and Case II.

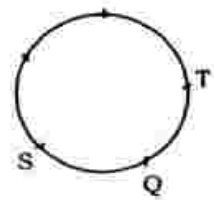


Case : I

If P is not immediate left of S, then we get

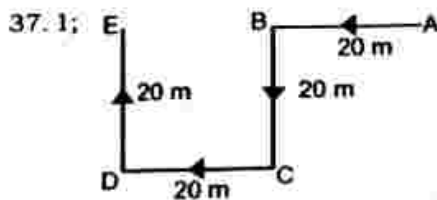


Case : I



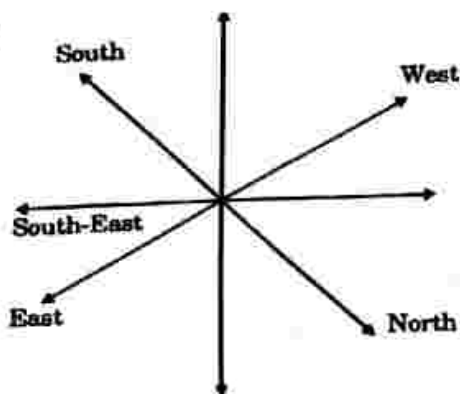
Case : II

Now it is clear that the person sitting second to the right of Q is P or R.

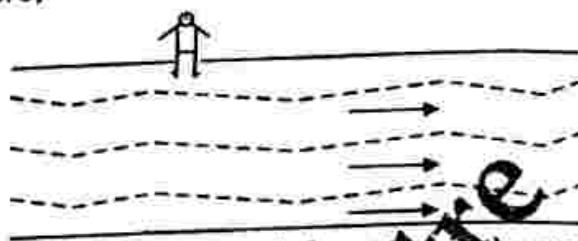


Obviously, $AE = AB + DC = 20 + 20 = 40$ m

38. 1;

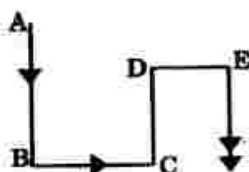


45. 3;



According to the information in the question part, the situation is as shown above. Now, it is clear that the person is facing North.

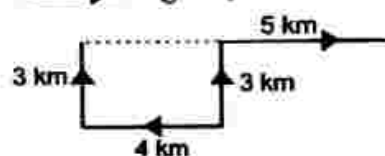
39. 3;



46. 2;

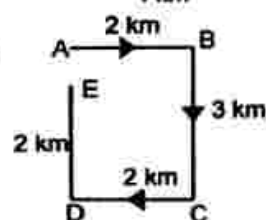


40. 3;



Look at the position of the two houses. It is clear that Sriram's house is facing West.

41. 2;

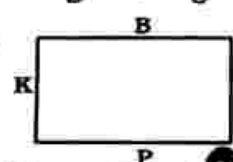


The order of the person's are :

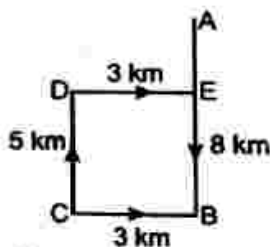
Ramesh Suresh Kamla Mohan Sohan

Now, it is clear that Sohan is sitting on extreme right position.

42. 4;



48. 4;

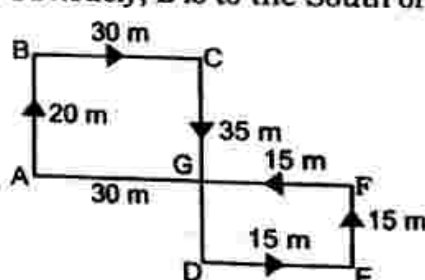


Obviously, E is to the South of A.

43. 1; The position of all the four persons will be as follows:

Hema, Ramesh, Ishan, Girija
Now, it is obvious that Girija is sitting on the extreme right end.

49. 4;



Obviously, AG = BC = 30 m

44. 3; The order of the five books are:

- E
- A
- D
- C
- B

50. 2; West

Now, it is clear that the book B is at bottom.

BLOOD RELATION

In this chapter we will study the different types of blood relations. A relation on the mother's side is called 'maternal' while that on the father's side is called 'paternal'. Thus, mother's brother is 'maternal uncle' while father's brother is 'paternal uncle'. Let us Summarize some common relations.

1.	Mother's or father's son	Brother
2.	Mother's or father's daughter	Sister
3.	Mother's or father's brother	Uncle
4.	Mother's or father's sister	Aunt
5.	Mother's or father's father	Grandfather
6.	Mother's or father's mother	Grandmother
7.	Son's wife	Daughter-in-law
8.	Daughter's husband	Son-in-law
9.	Husband's or wife's sister	Sister-in-law
10.	Husband's or wife's brother	Brother-in-law
11.	Brother's or Sister's son	Nephew
12.	Brother's or Sister's daughter	Niece
13.	Uncle or aunt's son or daughter	Cousin
14.	Sister's husband	Brother-in-law
15.	Brother's wife	Sister-in-law
16.	Grandson's or Granddaughter's daughter	Great grand daughter

1. Pointing towards a person (x), a man said to woman, "His mother is the only daughter of her father." How is the woman related to that person (x)?

(1) Daughter (2) Sister (3) Mother
(4) Wife (5) None of these

Sol. (3): The only daughter of woman's father is she herself. So, the person is woman's son, i.e. the woman is the person's mother. Hence, the answer is (3).

2. Pointing to a lady in the photograph, Shaloo said, "Her son's father is the son-in-law of my mother." How is Shaloo

related to the lady?

(1) Aunt (2) Sister (3) Mother
(4) Cousin (5) None of these

Sol. (2): Lady's son's father is lady's husband. So, the lady's husband is the son-in-law of Shaloo's mother. i.e. the lady is the daughter of Shaloo's mother. Thus, Shaloo is the lady's sister. Hence, the answer is (2).

3. Anil introduced Rohit as the son of the only brother of his father's wife. How is Rohit related to Anil?

(1) Cousin (2) Son (3) Uncle
(4) Son-in-law (5) None of these

Sol. (1): The relations may be analysed as follows:

Father's wife - mother, Mother's brother - Uncle, Uncle's son - Cousin.

So, Rohit is Anil's cousin. Hence, the answer is (1).

Pointing towards a person in the photograph, Anjali said "He is the only son of the father of my sister's brother." How is that person related to Anjali?

(1) Mother (2) Father
(3) Maternal uncle (4) Brother
(5) None of these

Sol. (4): The relations may be analysed as follows:

Sister's brother - Brother; Brother's father - Father; father's son - Brother.

So, the person in the photograph is Anjali's brother. Hence, the answer is (4).

Rita told Mani, "The girl I met yesterday at the beach was the youngest daughter of the son-in-law of my friend's mother." How is the girl related to Rita's friend?

(1) Cousin (2) Daughter (3) Niece
(4) Friend (5) None of these

Sol. (1): The relations may be analysed as follows:

Daughter of son-in-law - Niece; Mother's niece - Cousin.

So, the girl is the cousin of Rita's friend. Hence, the answer is (1).

6. A woman going with a boy is asked by another woman about the relationship between them. The woman replied, "My maternal uncle and the maternal uncle of his maternal uncle is the same." How is the lady related with that boy?

- (1) Grandmother and Grandson
- (2) Mother and Son
- (3) Aunt and Nephew
- (4) Brother and Sister
- (5) None of these

Sol. (4): Brother of woman's mother is the maternal uncle of the boy's maternal uncle. So, the woman can be maternal aunty/mother of the boy. Hence, the answer is (4).

7. Pointing out to a lady, Rajan said, "She is the daughter of the woman who is the mother of the husband of my mother." Who is the lady to Rajan?

- (1) Aunt
- (2) Grand daughter
- (3) Daughter
- (4) Sister
- (5) None of these

Sol. (1): The relations may be analysed as follows:

Mother's husband-Father;
 Father's mother-Grandmother;
 Grandmother's daughter-Father's sister;
 Father's sister-Aunt.

So, the lady is Rajan's aunt.

Hence, the answer is (1).

8. A man pointing to a photograph says, "The lady in the photograph is my nephew's maternal grandmother. How is the lady in the photograph related to the man's sister who has no other sister?"

- (1) Cousin
- (2) Sister-in-law
- (3) Mother
- (4) Mother-in-law
- (5) None of these

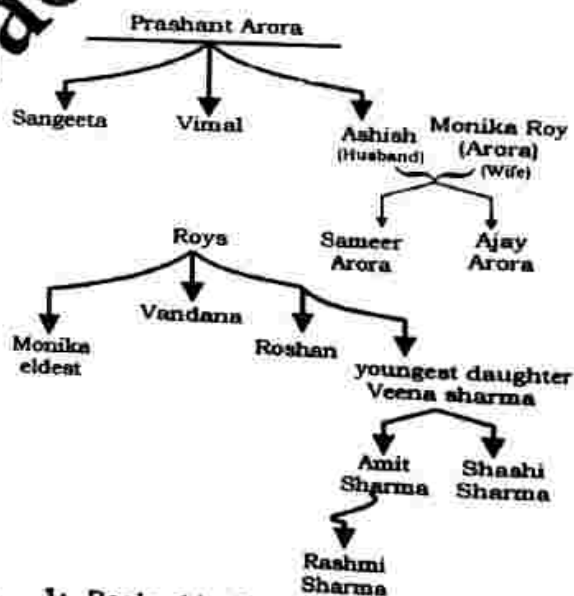
Sol. (3): Clearly, Nephew's maternal grandmother = sister's mother and hence own mother. Hence, the answer is (3).

9. Read the following information carefully and answer the questions given below:

Prashant Arora has three children-Sangeeta, Vimal and Ashish. Ashish married Monika, the eldest daughter of Mr. and Mrs. Roy. The Roys married their youngest daughter to the eldest son of Mr. and Mrs. Sharma, and they had two

children named Amit and Shaahi. The Roys have two more children, Roshan and Vandana, both elder to Veena. Sameer and Ajay are sons of Ashish and Monika. Rashmi is the daughter of Amit.

- I. What is the surname of Rashmi?
 (1) Sharma (2) Roy (3) Arora
 (4) Cannot be determined
 (5) None of these
- II. How is Sameer related to Monika's father?
 (1) Grandson (2) Son (3) Daughter
 (4) Son-in-law (5) None of these
- III. What is the surname of Sameer?
 (1) Roy (2) Sharma (3) Arora
 (4) Cannot be determined
 (5) None of these
- IV. How is Vimal related to Ashish?
 (1) Aunt (2) Mother-in-law
 (3) Mother (4) Sister-in-law
 (5) None of these



1; Rashmi is the daughter of Amit who is, therefore, the eldest son of Sharmas and married to Veena, the youngest daughter of the Roys. So, the surname of Rashmi is Sharma.

Hence, the answer is (1).

1; Sameer is the son of Ashish who is the son of Prashant Arora. So, Sameer is the grandson of Monika's father.

Hence, the answer is (1).

- III. 3: Sameer is the son of Ashish who is the son of Prashant Arora. So surname of Sameer is Arora.

Hence, the answer is (3).

- IV. 6: Ashish is married to Monika who is the daughter of Mrs. Roy. So, Mrs. Roy is the mother-in-law of Ashish.

Hence, the answer is (2).

10. Pointing to a woman a man says, "She is the sister-in-law of the only daughter of my mother-in-law's husband". How is the woman related to the man?

- (1) Daughter (2) Mother
(3) Daughter-in-law (4) Sister
(5) None of these

Sol. (4): My mother-in-law's husband = My father-in-law

Only daughter of my father-in-law = my wife. Sister-in-law of wife = my sister.

Hence, the answer is (4).

11. A is the brother of B. C is married to D. If C is the nephew of B. How is A related to D?

- (1) Father-in-law
(2) Mother-in-law
(3) Son-in-law
(4) Daughter-in-law
(5) None of these

Sol. (1): A is brother of B, C is nephew of B so C is son of A. Hence A is father-in-law of D.

12. Pointing to a photograph Y says, "He is the only brother of the only daughter of my sister's maternal grandmother." Pointing to another photograph, X says, "He is the only brother of the only daughter of my sister's maternal grandmother." If among the two photographs, one was either of Mr X. or Mr Y. and the photograph, towards which Y was pointing, was not of Mr X, then how is Y related to Mr X?

- (1) Grandfather
(2) paternal uncle
(3) maternal uncle
(4) Can't say
(5) None of these

Sol. (3): The photograph on which Y is looking is his maternal uncle. And the photograph on which X is looking is his maternal uncle. According to question the answer is (3).

Exercise:

- A is sister of B. C is brother of D. If D is a sister of A, how is B related to D?
(1) Brother (2) Brother or Sister
(3) Sister (4) Data inadequate
(5) None of these
- M is sister of D. D is brother of X. F is mother of M. How is K related to D?
(1) Son
(2) Daughter
(3) Son or Daughter
(4) Data inadequate
(5) None of these
- B is brother of D. D is sister of E. E is brother of F. How is F related to B?
(1) Brother
(2) Sister
(3) Brother or Sister
(4) Data inadequate
(5) None of these
- B is the only child of only daughter of C's paternal grandfather. How is C's father related to B?
(1) Maternal Uncle
(2) Paternal Uncle
(3) Father
(4) Can't be determined
(5) None of these
- M is sister of D. R is brother of D. F is father of M and T is mother of R. How is D related to T?
(1) Brother (2) Son (3) Daughter
(4) Data inadequate
(5) None of these
- Pointing to Hari, Seema says, "He is the paternal grandfather of my eldest son Mahesh. How is Hari related to Seema?"
(1) Father (2) Uncle
(3) Brother-in-law
(4) Data inadequate
(5) None of these
- Pointing to a girl, Mohan said, "She is the daughter of my grandfather's only daughter-in-law". How is Mohan related to that girl?
(1) Brother (2) Uncle
(3) Cousin (4) Can't be determined
(5) None of these

8. A said to B that B's mother was the mother-in-law of A's mother. How is A's mother related to B's mother?
- Daughter-in-law
 - Mother-in-law
 - Sister
 - Aunt
 - Sister-in-law
9. Pointing to a woman in a photograph, a man says, "She is the only daughter of the mother-in-law of my only son." How is the woman related to the man?
- Daughter
 - Wife
 - Daughter-in-law
 - Mother
 - Mother-in-law
10. Pointing to a woman in a photograph a man says, "She is the only daughter of my father's only daughter-in-law." How is the woman related to the man?
- Wife
 - Daughter
 - Daughter-in-law
 - Sister
 - Sister-in-law
11. Pointing to a man in a photograph a woman says, "He is the father of my only daughter-in-law's father-in-law." How is the man related to the woman?
- Father
 - Brother
 - Husband
 - Brother-in-law
 - Father-in-law
12. Pointing to a woman in a photograph a man says, "She is the only daughter of my wife's mother-in-law." How is the woman related to the man?
- Daughter
 - Wife
 - Sister
 - Sister-in-law
 - Mother-in-law
13. Pointing to a woman in a photograph a man says, "She is the only daughter of my father's mother-in-law." How is the woman related to the man?
- Daughter
 - Mother
 - Daughter-in-law
 - Mother-in-law
 - None of these
14. Pointing to a photograph a woman says, "He is the brother of the daughter of my mother-in-law's only son." How is the man related to the woman?
- Son
 - Brother
 - Brother-in-law
 - Nephew
 - Can't be exactly determined
15. Pointing to a photograph a woman says, "He is the son of the wife of my husband's father." How is the man related to the woman?
- Son
 - Son-in-law
 - Brother-in-law
 - Brother
 - None of these
16. Pointing to a man in a photograph a woman says, "He is the father-in-law of the wife of the only grandson of my own father-in-law." How is the man related to the woman?
- Son
 - Husband
 - Cousin
 - Nephew
 - Son-in-law
17. Pointing to a woman in a photograph, a man says, "She is the mother-in-law of the wife of the father of my only son." How is the woman related to that person?
- Daughter
 - Wife
 - Daughter-in-law
 - Sister-in-law
 - None of these
18. Pointing to a woman in a photograph a man says, "She is the grandmother of the son of my daughter-in-law's mother-in-law." How is the woman related to that person?
- Mother
 - Mother-in-law
 - Sister
 - Wife
 - Sister-in-law
19. Pointing to a woman in the photograph a man says, "This woman is the wife of the father of my wife's brother." How is the woman related to that person?
- Mother
 - Mother-in-law
 - Sister
 - Sister-in-law
 - Daughter
20. Pointing to a woman a man says, "She is the sister-in-law of the only daughter of my mother-in-law's husband." How is the woman related to the man?
- Daughter
 - Mother
 - Sister-in-law
 - Daughter-in-law
 - Sister

21. A is the father of B and C. B is the son of A but C is not the son of A. How is C related with A?
 (1) Daughter (2) Son (3) Niece
 (4) Nephew (5) None of these
22. Mayank said, "My mother is the sister of Rajat's brother." What is Rajat's relation with Mayank?
 (1) Cousin (2) Maternal uncle
 (3) Uncle (4) Brother-in-law
 (5) None of these
23. Ajay is the brother of Vijay. Mili is the Sister of Ajay. Sanjay is the brother of Rahul and Mehul is the daughter of Vijay. Who is Sanjay's Uncle?
 (1) Rahul (2) Ajay (3) Mehul
 (4) Data inadequate
 (5) None of these
24. A man introduced the boy coming with him as "He is the Son of the father of my wife's daughter". What relation did the boy bear to the man?
 (1) Son-in-law (2) Son (3) Brother
 (4) Father (5) None of these
25. Pointing towards Arun, Mr. Varun said, "He is the son of my sister's only brother. How is Arun related to Varun?
 (1) Son (2) Brother (3) Nephew
 (4) Data insufficient
 (5) None of these
26. If Amit's father is Billoo's father's only son and Billoo has neither a brother nor a daughter, what is the relationship between Billoo and Amit?
 (1) Uncle - nephew
 (2) Father - Daughter
 (3) Father - Son
 (4) Cousins
 (5) None of these
27. A is the sister of B. B is the son of C, and E is the daughter of D and sister of A. What is D to C?
 (1) Brother (2) Husband (3) Wife
 (4) Data is inadequate
 (5) None of these
28. If B's mother was A's mother's daughter, how was A related to B?
 (1) Uncle (2) Aunt (3) Sister
 (4) Data is insufficient
 (5) None of these
29. Pointing to a woman in the photograph a man said, "She is the daughter of my grandmother's only son. How is the woman related to the man?
 (1) Mother (2) Daughter
 (3) Sister-in-law (4) Sister
 (5) None of these
30. A man and a woman are sitting in a room. Man's mother-in-law and woman's mother-in-law are mother and daughter respectively. Man is the _____ of the woman.
 (1) Father (2) Mother (3) Uncle
 (4) Grandfather-in-law
 (5) None of these
31. Pointing to a photograph, a woman said, "She is the only daughter of my mother's father." How is the woman related to the person in the photograph?
 (1) Mother (2) Grandmother
 (3) Daughter (4) Cannot be determined
 (5) None of these
32. Pointing to a photograph a lady tells Mohan, "I am the only daughter of this lady and her son is your maternal uncle". How is the speaker related to Mohan's father?
 (1) Wife
 (2) Sister-in-law
 (3) Either of the two
 (4) Neither of the two
 (5) Cannot be determined
33. A is the mother of B. B's father C has three children. Based on these information, state which of the following statements is definitely true?
 (1) C has three daughters
 (2) C has three sons
 (3) B is a male child
 (4) B has two sisters
 (5) None of these
34. A is B's brother. A is C's brother. To find out how B is related to C, which of the following is the minimum further information necessary, if any?
 I. C's sex II. B's sex
 (1) Only I is necessary
 (2) Only II is necessary
 (3) Either I or II is necessary
 (4) Both I and II are necessary
 (5) Neither I nor II is necessary

35. Is D brother of F? To find out the answer which of the following information given in the statements A and B is/are sufficient?

(A) B has two Sons of which F is one.

(B) D's mother is married to B.

- (1) Both A and B together are needed
(2) Both A and B together are not sufficient
(3) Only A is sufficient
(4) Only B is sufficient
(5) Either A or B is sufficient

36. Introducing a man to her husband, a woman said, "His brother's father is the only son of my paternal grandfather." How is the woman related to the man?

- (1) Aunt (2) Mother
(3) Daughter (4) Mother-in-law
(5) Sister

37. Pointing to a photograph, a lady tells a boy, "I am the only daughter of this lady and her son is your maternal uncle." How is the speaker related to the boy's father?

- (1) Sister-in-law
(2) Wife
(3) Either (1) or (2)
(4) Neither (1) nor (2)
(5) None of these

38. Pointing to a woman, a man said, "Her husband's mother is the wife of my father's only son". How is the man related to the woman?

- (1) Son (2) Brother-in-law
(3) Uncle (4) Father-in-law
(5) Grandfather

39. Introducing a lady, a man said, "Her mother's husband's sister is my mother". What is the man's relationship with the lady?

- (1) Cousin
(2) Nephew-Aunt
(3) Father-daughter
(4) Data insufficient
(5) None of these

40. D is the son of J who is son of F. P is the daughter of R. If N is the sister of P and

daughter of J, what is J's relationship with R?

- (1) Brother (2) Father (3) Husband
(4) Uncle (5) None of these

Directions (41 - 45): Read the information given below and answer the following questions.

P is the father of R, but R is not his son. T is the daughter of R. U is the wife of P. Q is the brother of R. S is the son of Q. V is the wife of Q. W is the father of V.

41. Who is the Grandmother of S?

- (1) W (2) P (3) R
(4) U (5) None of these

42. Who is the son of U?

- (1) Q (2) R (3) T
(4) S (5) Cannot be determined

43. Who is the father-in-law of Q?

- (1) R (2) P (3) T
(4) W (5) None of these

44. Who is the sister-in-law of R?

- (1) S (2) V (3) U
(4) T (5) Cannot be determined

45. Who is the cousin of T?

- (1) R (2) Q (3) W
(4) S (5) None of these

Directions (46 - 50): Read the following statements and answer the questions given below :

Radha and Minilal have two children - Divya and Simmi. Divya got married to Anuj, who is the son of Madhu and Jabbar. Reshma is the daughter of Anuj. Anuj's sister Kiran got married to Subodh and Tarun and Aman are their sons. Tarun is the grandson of Madhu and Jabbar.

46. What is the relationship between Aman and Reshma?

- (1) Uncle - Niece
(2) Father - Daughter
(3) Husband - Wife
(4) Cousins
(5) None of these

47. How is Subodh related to Jabbar?

- (1) Son-in-law (2) Son
(3) Brother (4) Father-in-law
(5) None of these

48. How is Reshma related to Kiran?
 (1) Niece (2) Daughter (3) Mother
 (4) Aunt (5) None of these
49. How is Divya related to Kiran?
 (1) Aunt
 (2) Grandmother
 (3) Sister-in-law
 (4) Sister
 (5) None of these
50. Which of the following statements is definitely true?
 (1) Aman is the son of Simmi
 (2) Madhu is the Mother-in-law of Subodh
 (3) Reshma is the cousin of Kiran
 (4) All the three are true
 (5) None of these

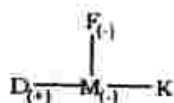
Answers with Explanation:

Note: The symbol '+' indicates male, '-' indicates female, $\longleftrightarrow$ indicates married couples.

1. 2; $A_{(-)} - B_{(-)} - D_{(-)} - C_{(+)}$

Obviously, B is either brother or sister of D.

2. 3;



Obviously, K is either son or daughter of F.

3. 3; $B_{(-)} - D_{(-)} - E_{(+)} - F$

Obviously, F is either brother or sister of B.

4. 1;

C's father is the paternal grandfather



Look at the shown family tree. B is child of the sister of C's father. Therefore, C's father is the maternal uncle of B.

5. 4; $R_{(+)} \longleftrightarrow T_{(-)}$
 $B_{(-)} - D - R_{(+)}$

Here, the gender of D is not known. Therefore, D is either son or daughter of

T. Since, we can't answer exactly, hence opt 'Data inadequate' as our answer.

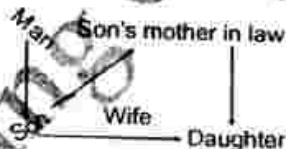
6. 5; Paternal grandfather of Seema's son implies father of Seema's husband i.e. Seema's father-in-law.

7. 1; Only daughter-in-law of one's paternal grandfather implies one's mother. Again, the daughter of one's mother implies one's sister.

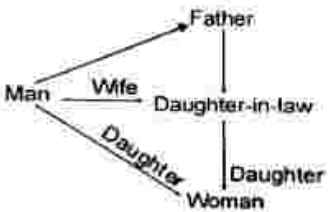
Thus, Mohan is the brother of the girl.

8. 1; If B's mother is the mother-in-law of A's mother then A's mother is the daughter-in-law of B's mother.

9. 3; Only daughter of the mother-in-law of one's son implies one's daughter-in-law.



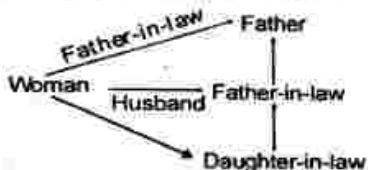
10. 2; One's father's only daughter-in-law implies one's wife. Again, the only daughter of one's wife implies one's daughter. Thus, the woman is speaker's daughter.



11. 5; Woman's daughter-in-law's father-in-law implies woman's husband.

Again, the father of woman's husband implies woman's father-in-law.

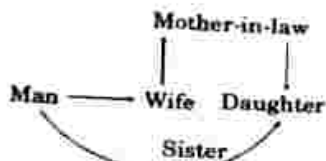
Hence, the man is woman's father-in-law.



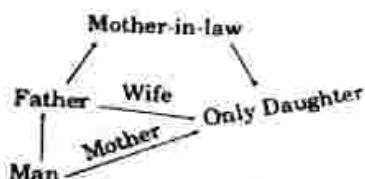
12. 3; The only daughter of one's wife's mother-in-law implies the only daughter of one's mother.

Again, only daughter of one's mother implies one's sister.

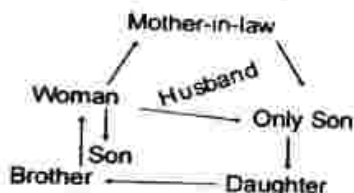
Hence, the woman is the sister of the man.



- 13.2; Note that only daughter of one's father's mother-in-law implies one's mother. Hence, the woman is the mother of the man.



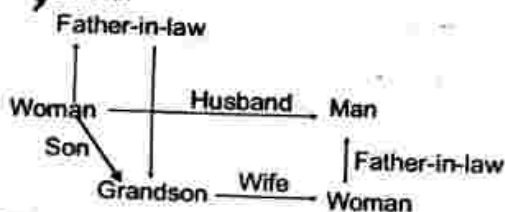
- 14.1; Woman's mother-in-law's only son implies woman's husband. Now, the brother of the daughter of woman's husband implies woman's son.



- 15.5; Woman's husband's father implies woman's father-in-law. Now, the wife of woman's father-in-law implies woman's mother-in-law. Again, only son of woman's mother-in-law implies woman's husband.

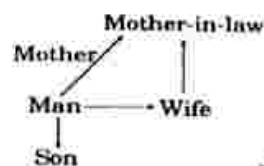


- 16.2; The only paternal grandson (who has no uncle) of woman's father-in-law implies woman's son. Now, the father-in-law of the wife of woman's son implies woman's husband.

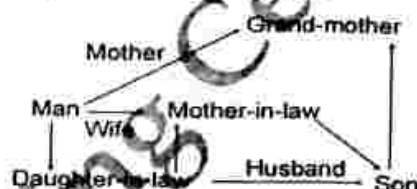


- 17.5; The wife of the father of man's only son

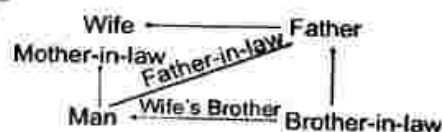
implies woman's wife. Now, the mother-in-law of man's wife implies man's mother.



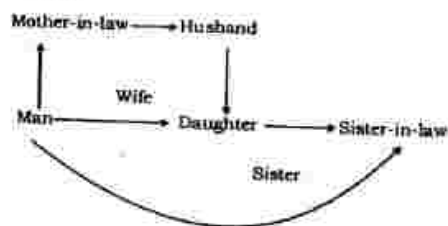
- 18.1; Man's daughter-in-law's mother-in-law implies man's wife. Now, the paternal grandmother of the son of man's wife implies man's mother.



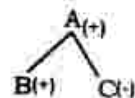
- 19.2; The father of man's wife's brother implies man's father-in-law. Again, the wife of man's father-in-law implies man's mother-in-law.



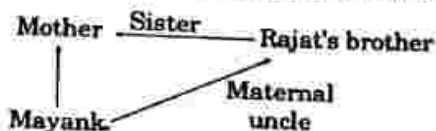
- 20.5; Only child of man's mother-in-law's husband implies man's wife. Now, the sister-in-law of man's wife implies man's sister.



- 21.1;

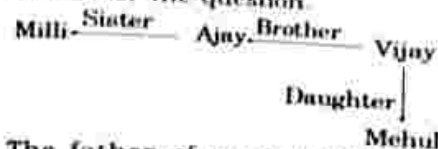


- 22.2; Mother's brother implies maternal uncle.

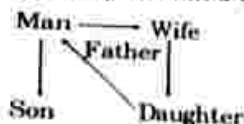


- 23.4; Here, we need some more information

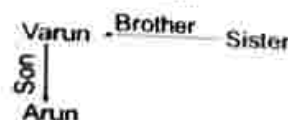
to answer the question.



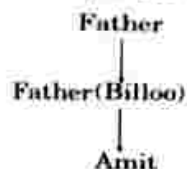
- 24.2; The father of man's wife's daughter implies man himself. Thus, the introduced boy is man's son.



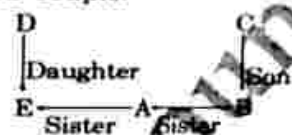
- 25.1; Varun's sister's only brother implies Varun himself. Thus, the introduced boy is the son of Varun.



- 26.3; According to the given information, Billoo is the father of Amit.



- 27.4; Here, the genders of D and C are not known. But it is clear that D and C are married couple.



28.4;



Case I : We have no information regarding A's gender. Hence, A can be either maternal uncle or maternal aunt of B.

Case II : If A is the only child of her parents then A is the mother of B.

Thus, the given information is not sufficient to answer the question.

- 29.4; Man's paternal grandmother's only son implies man's father. Now, the daughter of man's father implies man's sister.

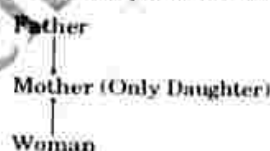


30.5;

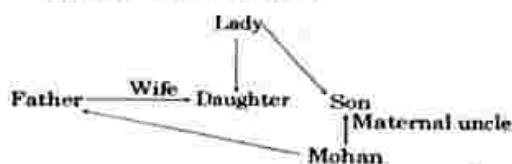


Look at the diagram shown. It is clear that the man is the father-in-law of the woman sitting with him (the man).

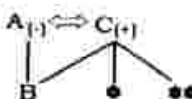
- 31.1; The only daughter of woman's mother's father implies woman's mother.



- 32.1; According to the given information, Mohan is the child of the speaker (woman). Therefore, the speaker is the wife of Mohan's father.



33.5;



We have no information regarding the gender of off springs of A and C. Therefore, all the given statements are doubtful.

- 34.2; C — A — B

Here, the question is :

how is B related to C?

Now, we need only the gender of B.

- 35.2; Both statements A and B even together are not sufficient to answer the question.

According to the given information, we can conclude that D is the child of B. It is not necessary that D is one of the two sons of B. D may be daughter of B.

36. 5; The only son of woman's paternal grandfather is woman's father.

Now, the son of woman's father is woman's brother.

Thus, the woman is the sister of the man.

37. 4; According to the given information, the speaker is the mother of the boy.

38. 4; The wife of speaker's (the man) father's only son implies the wife of the speaker.

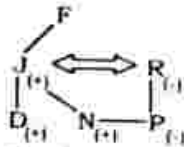
Now, we can conclude that woman's husband's mother is speaker's wife.

Thus, the speaker is woman's father-in-law.

39. 1; Note that woman's mother's husband's sister is woman's paternal aunt.

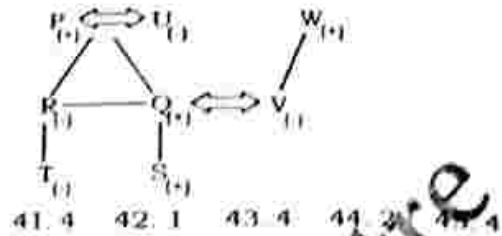
Now, the son of woman's paternal aunt is the cousin of the woman.

40. 3;

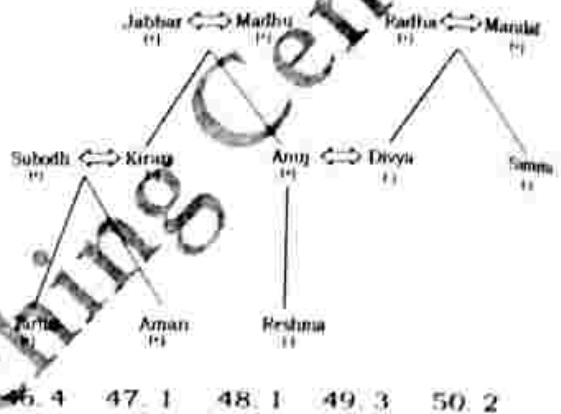


Obviously, J is the husband of R.

41 - 45:



46 - 50:



CODED RELATIONSHIP

Directions (1 - 10): Read the following information carefully and answer the questions given below:

- (i) $P + Q$ means P is the father of Q.
- (ii) $P - Q$ means P is the mother of Q.
- (iii) $P \times Q$ means P is the brother of Q.
- (iv) $P \div Q$ means P is the sister of Q.
- (v) $P \star Q$ means P is the son of Q.
- (vi) $P \# Q$ means P is the daughter of Q.

1. How is A related to F in the given expression?

$$A + B \times C + D \star E \# F$$

- (1) Son (2) Son-in-law
- (3) Brother (4) Father-in-law
- (5) None of these

2. How is A related to F in the given expression?

$$A \star B + C \# D + E \star F$$

- (1) Paternal Grandson
- (2) Maternal grandson
- (3) Paternal granddaughter
- (4) Maternal granddaughter
- (5) None of these

3. How is A related to F in the given expression?

$$A \# B + C \star D - E + F$$

- (1) Brother (2) Cousin
- (3) Sister (4) Father
- (5) None of these

4. How is A related to F in the given expression?

$$A \star B + C \div D + E \div F$$

- (1) Brother (2) Sister
- (3) Father (4) Uncle
- (5) Cousin

5. How is A related to F in the given expression?

$$A + B + C \times D + E \# F$$

- (1) Brother (2) Father
- (3) Cousin (4) Husband
- (5) None of these

6. How is F related to A in the given expression?

$$A \# B - C \star D + E - F$$

- (1) Brother (2) Sister
- (3) Cousin (4) Brother or Sister
- (5) None of these

7. How is F related to A in the given expression?

$$A \star B \times C \# D + E \star F$$

- (1) Father
- (2) Paternal grandfather
- (3) Maternal grandfather
- (4) Uncle
- (5) None of these

8. How is F related to A in the given expression?

$$A \star B \times C + D \times E - F$$

- (1) Brother (2) Sister
- (3) Cousin (4) Aunt
- (5) None of these

9. How is F related to A in the given expression?

$$A + B - C \times D + E \times F$$

- (1) Paternal grandson
- (2) Paternal granddaughter
- (3) Maternal grandson
- (4) Maternal granddaughter
- (5) Maternal grandson or granddaughter

10. How is F related to A in the given expression?

$$A \# B \times C + D \times E \# F$$

- (1) Aunt (2) Mother
- (3) Grandmother (4) Sister
- (5) None of these

Directions (11 - 20): Read the following information carefully and answer the questions given below:

- (i) $A + B$ means B is the father of A.
- (ii) $A - B$ means B is the mother of A.
- (iii) $A \times B$ means B is the brother of A.
- (iv) $A \div B$ means B is the sister of A.
- (v) $A \star B$ means B is the son of A.
- (vi) $A \# B$ means B is the daughter of A.

11. How is P related to U in the given expression?
 $U - T \# S + R \star Q \# P$
 (1) Daughter (2) Sister (3) Niece
 (4) Aunt (5) None of these
12. How is P related to U in the given expression?
 $U \times T + S \star R + Q \star P$
 (1) Brother (2) Son (3) Cousin
 (4) Nephew (5) None of these
13. How is P related to U in the given expression?
 $U + T \times S \div R \times Q + P$
 (1) Father
 (2) Paternal grandfather
 (3) Maternal grandfather
 (4) Great grandfather
 (5) None of these
14. How is P related to U in the given expression?
 $U + T \star S \times R - Q \times P$
 (1) Father
 (2) Paternal uncle
 (3) Maternal uncle
 (4) Grandfather
 (5) None of these
15. How is P related to U in the given expression?
 $U - T \# S \div R + Q + P$
 (1) Sister (2) Mother
 (3) Grandmother (4) Aunt
 (5) None of these
16. How is U related to P in the given expression?
 $U \# T \times S \div R \star Q \times P$
 (1) Paternal grandfather
 (2) Paternal grandmother
 (3) Maternal grandfather
 (4) Maternal grandmother
 (5) Data inadequate
17. How is U related to P in the given expression?
 $U \# T \times S \div R \times Q + P$
 (1) Husband (2) Wife
 (3) Sister (4) Mother-in-law
 (5) None of these
18. How is U related to P in the given expression?
 $U \# T - S \# R \div Q \# P$
 (1) Maternal grandfather
 (2) Maternal grandmother
 (3) Paternal grandfather
 (4) Paternal grandmother
 (5) Data Inadequate
19. In which of the given expression P is the brother of U?
 (1) $U \times T + S - R + Q \# P$
 (2) $U \times T \times S - R + Q \times P$
 (3) $U \div T - S + R \star Q \star P$
 (4) $U \div T - S \# R + Q \div P$
 (5) $U \div T - S \# R \star Q \star P$
20. In which of the given expression P is the mother-in-law of U?
 (1) $U \star T \times S \div R - Q - P$
 (2) $U \# T + S \times R - Q + P$
 (3) $P \star Q \times R \div S - T - U$
 (4) $P \# Q \div R \div S - T + U$
 (5) $U \# T - S \div R \star Q + P$
- Directions (21 - 25): Read the following information carefully and answer the questions which follow:**
- (i) $A \times B$ means A is father of B.
 (ii) $A + B$ means A is daughter of B.
 (iii) $A \div B$ means A is mother of B.
 (iv) $A - B$ means A is brother of B.
21. If ' $P + Q - R \div T$ ', how is T related to P?
 (1) Aunt (2) Brother (3) Father
 (4) Grandmother (5) Cousin
22. Which of the following means that R is wife of P?
 (1) $P \times R - Q - T$ (2) $P + T + R - Q$
 (3) $P \div R - Q + T$ (4) $P \times T - Q + R$
 (5) None of these
23. If ' $P \times T + Q \div R$ ' how is R related to P?
 (1) Daughter
 (2) Husband
 (3) Son-in-law
 (4) Son-in-law or Daughter-in-law
 (5) None of these

24. If $P + R - Q \times T$, how is P related to T?
 (1) Grandmother
 (2) Mother-in-law
 (3) Sister
 (4) Grandfather
 (5) None of these
25. If $P \div Q + R \times T$ how is T related to Q?
 (1) Aunt (2) Sister
 (3) Brother (4) Grandson
 (5) Brother or Sister

Directions (26 - 30): Read the following information carefully and answer the questions, which follow:

- (i) $A - B$ means A is father of B.
 (ii) $A + B$ means A is daughter of B.
 (iii) $A \div B$ means A is son of B.
 (iv) $A \times B$ means A is wife of B.
26. How is P related to T in the expression $P + S - T$?
 (1) Sister (2) Wife (3) Son
 (4) Daughter (5) None of these
27. In the expression $P \times Q - T$ how is T related to P?
 (1) Daughter (2) Son (3) Mother
 (4) Can't be determined
 (5) None of these
28. Which of the following means T is wife of P?
 (1) $P \times S \div T$ (2) $P + S \times T$ (3) $P - S + T$
 (4) $P + T \div S$ (5) None of these
29. Which of the following means P is maternal grandson of S?
 (1) $P + Q - S$ (2) $P \div Q \times S$ (3) $P + Q + S$
 (4) $P \times Q - S$ (5) None of these
30. In the expression $P + Q \times T$ how is T related to P?
 (1) Mother (2) Father (3) Son
 (4) Brother (5) None of these

Directions (31 - 35): Read the following information carefully and answer the questions, which follow:

- (i) $A - B$ means A is daughter of B.
 (ii) $A + B$ means A is wife of B.
 (iii) $A \div B$ means A is father of B.
 (iv) $A \times B$ means A is son of B.

31. In the expression $P \times R - S$ how is P related to S?
 (1) Father (2) Grandfather
 (3) Maternal Grandson
 (4) Sister (5) None of these
32. Which of the following means S is son-in-law of P?
 (1) $P + R \times S$ (2) $P - R \times S$ (3) $P \div R + S$
 (4) $P - R + S$ (5) None of these
33. In the expression $P - Q + S$ how is S related to P?
 (1) Mother (2) Father
 (3) Brother (4) Sister
 (5) None of these
34. How is P related to S in the expression: $P \times Q - S$?
 (1) Brother (2) Wife (3) Son
 (4) Sister (5) Can't be determined
35. How is S related to P in the expression $P + R - S$?
 (1) Son (2) Daughter
 (3) Daughter-in-law
 (4) Sister (5) Can't be determined

Directions (36 - 40): Study the following information carefully and answer the questions given below:

- (i) $P \times Q$ means P is brother of Q.
 (ii) $P - Q$ means P is mother of Q.
 (iii) $P + Q$ means P is sister of Q.
 (iv) $P \div Q$ means P is father of Q.
36. How is W related to M in the expression $W + T \div R \times M$?
 (1) Maternal aunt
 (2) Paternal aunt
 (3) Grandmother
 (4) Data inadequate
 (5) None of these
37. How is K related to D in the expression $D - J + M \div K$?
 (1) Grandson (2) Nephew (3) Niece
 (4) Data inadequate
 (5) None of these
38. How is R related to M in the expression $M + J + T \times R$?
 (1) Nephew (2) Niece
 (3) Nephew or Niece
 (4) Data inadequate
 (5) None of these

39. Which of the following expression represents T is nephew of J?
- (1) $J \times M - F \times T$ (2) $J \times M - F + T$
 (3) $J \times M + F \times T$ (4) $J \times M + F + T$
 (5) None of these

40. Which of the following expression represents B is the paternal uncle of H?
- (1) $B \times M + H$ (2) $B + M + H$
 (3) $B \times M + H$ (4) $B + M - H$
 (5) None of these

Directions (41 - 45): These questions are based on the following information:

$P \odot Q$ means Q is the brother of P.
 $P \# Q$ means P is the daughter of Q.
 $P = Q$ means Q is the sister of P.
 $P \in Q$ means P is the son of Q.
 $P + Q$ means P is the father of Q.
 $P @ Q$ means P is the mother of Q.

41. Which of the following is a **correct** conclusion drawn from the expression ' $Q \in N @ S \odot M = P$ '?
- (1) S is the brother of P.
 (2) N has two sons and two daughters.
 (3) S is the sister of Q.
 (4) P is the sister of Q.
 (5) None of these
42. What does the expression ' $P @ R = S \odot T \in V$ ' mean?
- (1) V is the husband of P.
 (2) R is the son of V.
 (3) R is the daughter of P.
 (4) V is the wife of P.
 (5) None of these
43. Which of the following indicates that 'C' is the paternal uncle of D?
- (1) $C \in V \# @ P \odot D$
 (2) $C \in V \# L @ N \odot D$
 (3) $D \in L @ N @ V \odot C$
 (4) $P \odot C @ V @ L \odot C$
 (5) None of these
44. Which of the following indicates that 'Q' is the daughter of N?
- (1) $Q + P \# C @ N @ V$
 (2) $N + P \# C @ Q @ V$
 (3) $M @ N \# R + Q$
 (4) $M \odot Q = V \# N$
 (5) None of these
45. Which of the following is the **correct** conclusion drawn from the expression

$L = M \# N \odot P + Q$?

- (1) Q is the grandson of M.
 (2) L is the uncle of N.
 (3) N is the uncle of Q.
 (4) Q is the niece of N.
 (5) None of these

Directions (46 - 50): These questions are based on the following information:

$P = Q$ means Q is the father of P.
 $P - Q$ means P is the sister of Q.
 $P \# Q$ means Q is the mother of P.
 $P \$ Q$ means P is the brother of Q.
 $P \in Q$ means Q is the son of P.
 $P \times Q$ means P is the daughter of Q.

46. Which of the following is not correct?
- (1) $L \$ M + O$ means O is the sister of L.
 (2) $M + O \in P + Q$ means Q and O are husband and wife.
 (3) $P = Q \odot R$ means R is the grandmother of P.
 (4) $R \# S \# T$ means R is the granddaughter of T.
 (5) All are correct
47. Which of the following is **correct**?
- (1) $L \in M \$ R$ means R is the paternal uncle of L.
 (2) $M \$ R - D \# V$ means M is the son of V.
 (3) $D \# V \times T$ means D is the granddaughter of T.
 (4) $V \times T + P$ means P is the maternal uncle of V.
 (5) None is correct
48. Which of the following indicates 'A' is the grandfather of B?
- (1) $M \times A = N = B$ (2) $B \$ L \times Q \times A$
 (3) $L + B = S \$ Q = A$ (4) $B \times L \times A$
 (5) None of these
49. Which of the following means 'F' is the paternal uncle of G?
- (1) $L = F \$ Q \in G$ (2) $G \times M + F \$ L$
 (3) $N \$ F \$ L \times G$ (4) $G \times L \$ F \$ N$
 (5) None of these
50. ' $S \times M + B \in L = F \# Q$ ' reveals which of the following relations?
- (1) M is the maternal aunt of L.
 (2) L is the granddaughter of Q.
 (3) B is the paternal uncle of S.
 (4) F and B are brother and sister.
 (5) None of the above relations gets revealed.

Answers with explanations:

1 - 10 :

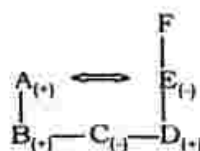
1 to 10 are questions related with **Forward Type** coding. In this type of coding, symbol focusses on the element which is at forward position.

Here, P + Q means P is the father of Q.

The symbol '+' focusses on P, the element at forward position.

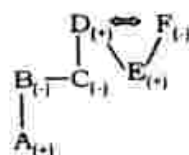
In this type of questions, you are advised to read the expression from left to right. Make a family tree carefully and answer the related questions.

1. 2;



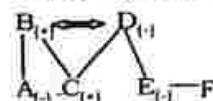
Obviously, A is the son-in-law of F.

2. 2;



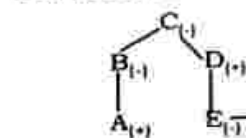
Obviously, A is the maternal grandson of F.

3. 3;



Obviously, A is the sister of F.

4. 5;



Obviously, A is the cousin of F.

5. 4;



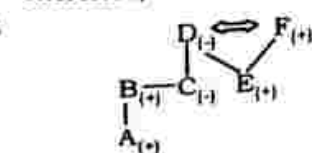
Obviously, A is the husband of F.

6. 4;



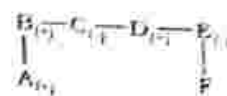
Here, the gender of F is not known. Therefore, F is either brother or sister of A.

7. 2;



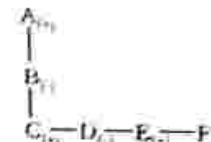
Obviously, F is the paternal grandfather of A.

8. 3;



Obviously, F is the cousin of A.

9. 5;



Here, the gender of F is not known.

Therefore, F is either maternal grandson or maternal granddaughter of A.

10. 1;



Obviously, F is the aunt of A.

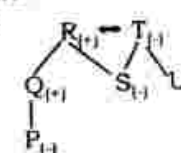
11 - 20 :

11 to 20 are questions related with **Backward Type** coding. In this type of coding, symbol focusses on the element which is at backward position.

Here, A + B means B is the father of A. The symbol '+' focusses on B, the element at backward position.

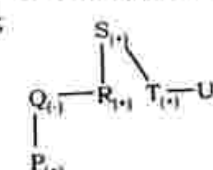
In this type of questions, you are advised to read the expression from right to left. Make a family tree carefully and answer the related questions.

11. 3;



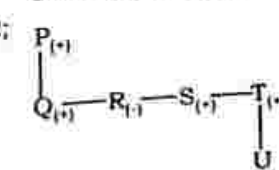
Obviously, P is the niece of U.

12. 4;

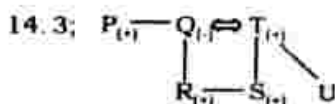


Obviously, P is the nephew of U.

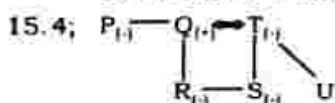
13. 2;



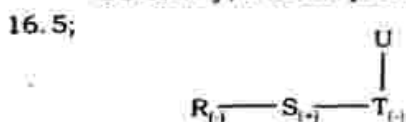
Obviously, P is the paternal grandfather of U.



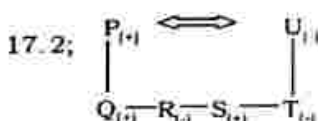
Obviously, P is the maternal uncle of U.



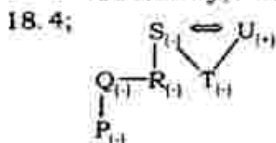
Obviously, P is the paternal aunt of U.



Here, the gender of U is not known. Hence, we need some more information to decide whether U is maternal grandfather or maternal grandmother of P.



Obviously, U is the wife of P.



Obviously, U is the maternal grandfather of P.

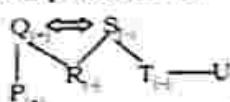
- 19.5; We have to see that P is the brother of U. Therefore, P must be male. Also, the gender gap between P and U must be zero. Look at the expression (1). In this expression P is represented as a female. Note that $Q + R$ means P is the daughter of Q. Therefore, reject the expression (1). Similarly, in expression (4) P is represented as a female. Note that $Q + R$ means P is the sister of Q. Therefore, reject the expression (4).

Now look at the generation gap between P and U in the expressions (2) and (3).

$$\begin{array}{l} \begin{array}{cccccc} 0 & 0 & +1 & +1 & 0 \\ (2) & U \times T \times S - R + Q \times P \\ & (0 + 0 + 1 + 1 + 0 = 2) \end{array} \\ \begin{array}{cccccc} 0 & +1 & +1 & +1 & 0 \\ (3) & U + T - S + R + Q \times P \\ & (0 + 1 + 1 + 1 + 0 = 3) \end{array} \end{array}$$

The generation gaps between P and U in these expressions are not zero. Therefore, reject the expressions (2) and (3).

Now, by elimination, the expression (5) is our answer. Now, look at the family tree for expression (5).



Obviously, P is the brother of U.

- 20.1; If P is the mother-in-law of U, then P must be represented as a female in the answer expression. Also, P's position must be one generation above than U.

Reject the expressions (2) and (5), because in these two expressions P is represented as a male.

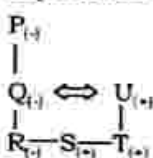
Now, look at the generation gaps between P and U in the expressions (3) and (4).

$$\begin{array}{l} \begin{array}{cccccc} -1 & 0 & 0 & +1 & +1 \\ (3) & P \neq Q \times R - S - T - U \\ & (-1 + 0 + 0 + 1 + 1 = 1) \end{array} \\ \begin{array}{cccccc} -1 & 0 & 0 & +1 & +1 \\ (4) & P \neq Q \div R - S - T + U \\ & (-1 + 0 + 0 + 1 + 1 = 1) \end{array} \end{array}$$

In these two expressions P's position is one generation below than U. Therefore, reject the expressions (3) and (4).

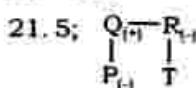
Now, by elimination, the expression (1) is our answer.

Now, look at the family tree for expression (1).



Obviously, P is the mother-in-law of U.

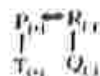
21 - 25:



Obviously, T is the cousin of P.

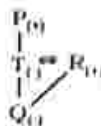
- 22.4; Reject the expressions (1), (2) and (3) because in all the three expressions R is represented a male.

Now, make a family tree for the expression (4)



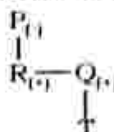
Obviously, R is the wife of P.

23. 3;



Obviously, R is the son-in-law of P.

24. 1;



Obviously, P is the paternal grandmother of T.

25. 5;



Here, the gender of T is not known. T is either brother or sister of Q.

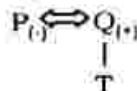
26 - 30:

26. 1;



Obviously, P is the sister of T.

27. 4;



We have no information regarding the gender of T. Hence, T is either son or daughter of P.

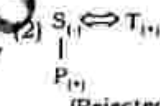
28. 3; (1)



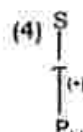
(Rejected)



(Selected)



(Rejected)



(Rejected)

29. 3; Reject the expressions (1) and (4) because in these expressions P is represented as a female. Now, reject the expression (2) because in this expression the generation gap between

P and S is -1. Note that if P is the grandson of S then the position of P must be two generations lower than S. It means the generation gap between P and S must be -2. Now, check the expression (3)



Obviously, P is the maternal grandson of S.

30. 2;



Obviously, T is the father of P.

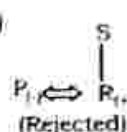
31 - 35:

31. 3;

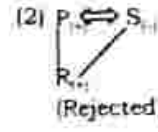


Obviously, P is the maternal grandson of S.

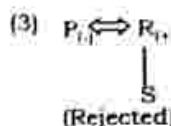
32. 4; (1)



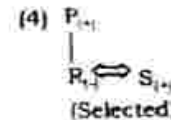
(Rejected)



(Rejected)



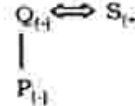
(Rejected)



(Selected)

In expression (4), S is the son-in-law of P. If you check generation gap between P and S in each equation, you can easily reject the expressions (1), (2) and (3).

33. 2;



Obviously, S is the father of P.

34. 1;

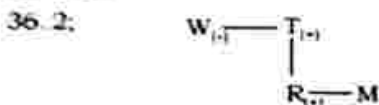


Obviously, P is the brother of S.

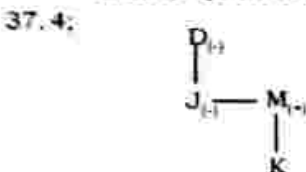


Here, the gender of S is not known. S is either son or daughter of P.

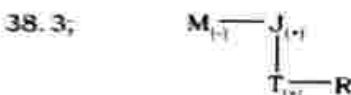
36 - 40:



Obviously, W is the paternal aunt of M.

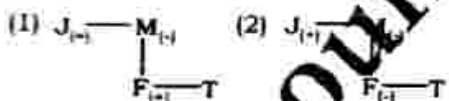


Gender of K is not known. Here, K is either grandson or granddaughter of D.



Obviously, R is either nephew or niece of M.

39. 5; Look at the given expressions carefully. In all the expressions the gender of T is not known. Hence, no expression can fulfill our objective. Therefore, reject all expressions. You can also use family tree method.



(Rejected) (Rejected)



(Rejected) (Rejected)

In all the given expressions, T is either nephew or niece of J.

40. 1; We have to look for the expression in which B is represented as a male and the position of B must be one generation above H.

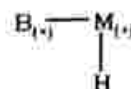
Reject the expressions (2) and (4), because in these expressions B is represented as a female.

Reject the expression (3) because the

generation gap between B and H is zero.

$$\begin{array}{c} 0 \quad 0 \\ B \times M + H \\ (0 + 0 = 0) \end{array}$$

Now, checked expression (1)



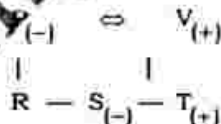
Obviously, B is the paternal uncle of H.

41. 4;



Since, the gender of S is not known, (1), (2) and (3) are not necessarily true. (4) is true.

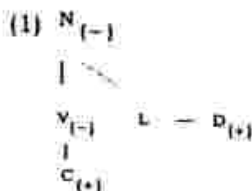
42. 1;



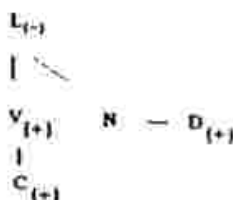
Since, the gender of R is not known, (2) and (3) are not necessarily true. Reject (4) because V is a male.

43. 3;

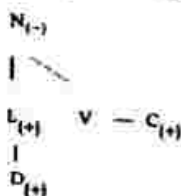
Make family trees of the given expressions:



Here, C is the nephew of D. (Rejected) (2)



Here, C is the nephew of D. (Rejected) (3)



Here, C is the paternal uncle of D.
(Answer)(4)

$V_{(-)}$

|

$N_{(-)} \quad L - C_{(+)}$

$D_{(-)}$

Here, C is the maternal uncle of D. (Rejected)

44. 2; Reject (1) and (4) because in these expressions Q has been represented as a male. Reject (3) because the gender of Q is not known. Now, check option (2).

$N_{(-)} \Leftrightarrow C_{(-)}$

| |
P Q
|
V

Here, Q is the daughter of N.

45. 5;

$N - P_{(-)}$
 $L - M_{(-)} \quad Q$

Reject (1) because Q is the cousin of M.
Reject (2) because L is the child of N.
Reject (3) because the gender of N is not known. Reject (4) because the gender of Q is not known.

46. 1;

(1) $L_{(-)} - M_{(-)}$

Hence, O is either mother or sister of L.
Thus, (1) is not necessarily true.

(2) $M_{(-)} - P_{(-)}$

Hence, Q and O are husband and wife, respectively.

Thus, (2) is correct.

(3) $R_{(-)}$
 $Q_{(-)}$
P

Hence, R is the grandmother of P.
Thus (3) is correct.

(4) $T_{(-)}$
S
 $R_{(-)}$

Hence, R is either maternal granddaughter or paternal granddaughter of T.
Thus, (4) is correct.

47. 2; (1)

L
 $M_{(-)} - R$

Hence, R is either son or daughter of L.
Thus, (1) is incorrect.

(2)

$V_{(-)}$
 $M_{(-)} - R_{(-)} - D$

Hence, M is the son of V.
Thus, (2) is correct.

(3) T
 $V_{(-)}$
D

Hence, D is either granddaughter or grandson of T.

Thus, (3) is not necessarily true.

(4) $T_{(-)} - P$
 $V_{(-)}$

Hence, P is either maternal uncle or maternal aunt of V.

Thus, (4) is not necessarily true.

48. 3; (1)

$B_{(+)}$
 $N_{(+)}$
A
 $M_{(-)}$

Here, the gender of 'A' is not known. In this equation 'A' is represented as either grandson or granddaughter of 'B'.

Hence, reject (1).

(2)

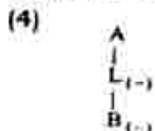
A
 $Q_{(-)}$
 $B_{(+)} - L_{(-)}$

Here, the gender of A is not known. From the above family tree it is obvious that A is either maternal grandfather or maternal grandmother of B.

Hence, reject (2).



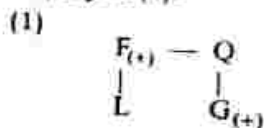
Here, A is the paternal grandfather of B. Thus (3) is our answer.



Here, the gender of A is not known. Hence, A is either maternal grandfather or maternal grandmother of B.

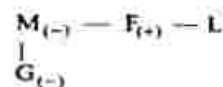
Therefore, reject (4).

49. 4;



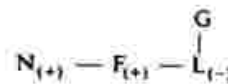
Since the gender of Q is not known, hence we can't say with certainty that F is the paternal uncle of G. If Q is a female then F is the maternal uncle of G. Thus, reject (1).

(2)



Here, F is the maternal uncle of G. Thus, reject (2).

(3)



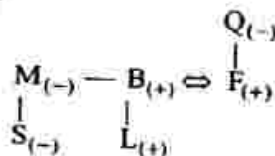
Here, F is the son of G. Hence, reject (3).

(4)



Here, F is the paternal uncle of G. Hence, (4) is our answer.

50. 4; Here, we have



- (1) True (2) False
(3) False (4) False

SITTING ARRANGEMENT

In this chapter we will deal with the questions originating on the sitting arrangement problems. We can sit in a line, in parallel lines or in a circular manner.

Directions (1 - 5): Study the following information carefully and answer the questions:

A, B, C, D, E, F, G and H are sitting around a circle, facing the centre. E and G always sit next to each other. D sits third to the right of C. F sits second to the left of H. C never sits next to A while D never sits next to G. H is not the neighbour of D and C.

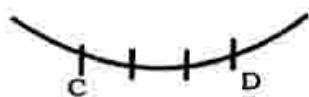
- Who sits between A and D?
(1) B (2) F (3) C
(4) E (5) None of these
- Who sits second to the left of B?
(1) F (2) G (3) A
(4) E (5) None of these
- Who sits to immediate right of F?
(1) D (2) C (3) B
(4) A (5) None of these
- Which of the following pairs sits between B and F?
(1) HB (2) FD (3) AG
(4) GC (5) AH
- Four of the following are alike in a certain way based on their positions in the seating arrangement and so form a group. Which is the one that does not belong to that group?
(1) CH (2) BA (3) FE
(4) DG (5) AC

Sol. Note down all the given arrangements

(i) AG or GE



(ii) C _ _ D (2 places vacant between C and D).

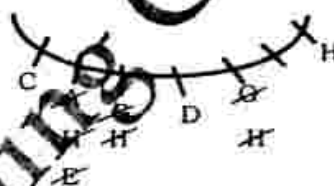


(iii) F _ H (1 place vacant between F and H).

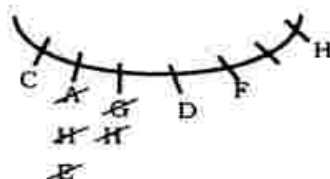


(iv) C A (both can't be together)

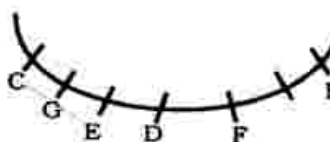
Now, mark the position which will never be possible



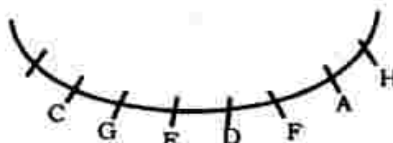
Now, mark F second left from H.



G and E are always together which is possible only between C and D



A cannot be near C. So, it has to be between F and H.

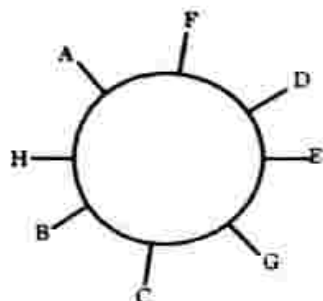


(v) G D (both can't be together)

(vi) HD or DH (can never be together)

HC or CH (can never be together)

The remaining character is B. It has to be near C.



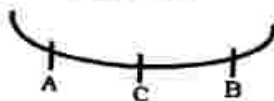
Ans. 1. (2), 2. (3), 3. (4), 4. (5), 5. (5)

Directions (6 - 8): Read of the following information carefully to answer these questions:

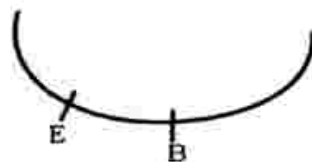
- (i) A, B, C, D and E are sitting along a circle facing the centre.
 - (ii) C is neighbour of A and B.
 - (iii) E is to the immediate left of B.
6. Which of the following is a false statement?
- (1) E is to the immediate right of D
 - (2) D is second to the right of C
 - (3) A is third to the right of E
 - (4) A is between C and D
 - (5) None of these
7. What is the position of D?
- (1) To the immediate right of E
 - (2) Third to the right of B
 - (3) To the immediate left of A
 - (4) Second to the left of C
 - (5) None of these
8. Which of the following is true statement?
- (1) A is second to the left of B
 - (2) B is second to the left of D
 - (3) D is between A and E
 - (4) C is third to the right of E
 - (5) None of these

Sol. Read the statement carefully and note down the important relations

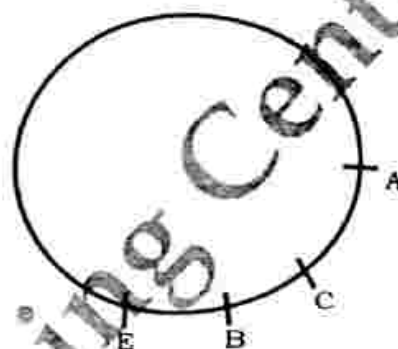
- (i) A C B or B C A



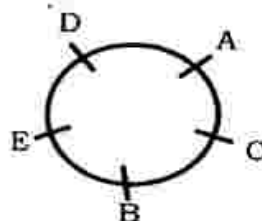
- (ii) E B



- (iii) Combining (i) & (ii)



- (iv) Put D in a suitable position



Ans. 6. (5), 7. (2), 8. (3)

Directions (9 - 13): These questions are based on the basis of following information. Study it carefully and answer the questions.

Eight executives J, K, L, M, N, O, P, & Q are sitting around a circular table for a meeting. J is second to the right of P who is third to the right of K. M is second to the left of O who sits between P & J, L is not a neighbour of K or N.

- 9. Who is to the immediate left of L?

 - (1) Q (2) O (3) K
 - (4) N (5) None of these

- 10. Who is to the immediate left of K?

 - (1) N (2) J (3) Q
 - (4) Cannot be determined
 - (5) None of these

11. Which of the following is the correct position of N?

- (1) Second to the right of K
- (2) Immediate left of K
- (3) Immediate right of M
- (4) Immediate right of K
- (5) None of these

12. Who is third to the right of P?

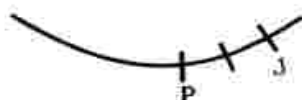
- (1) L (2) J (3) Q
- (4) N (5) None of these

13. Which of the following groups of persons have the first person sitting between the other two?

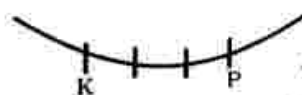
- (1) PJO (2) OPJ (3) OPM
- (4) MPO (5) None of these

Sol. Note down all the given arrangements as:-

(i) P - J



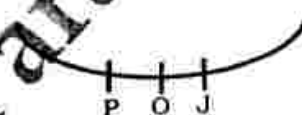
(ii) K - - P



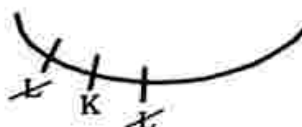
(iii) M - O



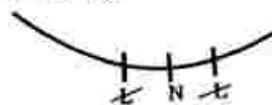
(iv) P O J



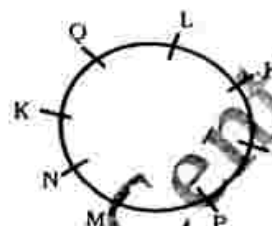
(v) $\angle K$ or $K\angle$



(vi) $\angle N$ or $N\angle$



(vii)



Ans. 9. (5), 10. (3), 11. (4), 12. (1), 13. (2)

Directions (14-19): Study the following information and answer the questions given below:

M, N, P, R, T, W, F and H are sitting around a circle at the centre, P is third to the left of M and second to the right of T. N is second to the right of P. R is second to the right of W who is second to the right of M. F is not an immediate neighbour of P.

Who is to the immediate right of P?

- (1) H (2) F (3) R
- (4) Data inadequate
- (5) None of these

15. Who is to the immediate right of H?

- (1) R (2) F (3) M
- (4) Data inadequate
- (5) None of these

16. Who is to the immediate left of ?

- (1) P (2) H (3) W
- (4) T (5) Data inadequate

17. Who is third to the right of H?

- (1) T (2) W (3) R
- (4) F (5) Data inadequate

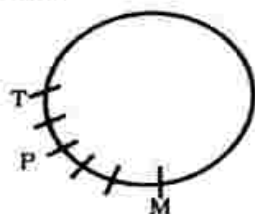
18. Who is second to the right of F?

- (1) M (2) R (3) T
- (4) Data inadequate (5) None of these

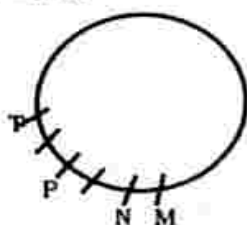
19. In which of the following is the first person sitting in between the second and the third person?

- (1) NHM (2) PHN (3) TRP
- (4) TWF (5) None of these

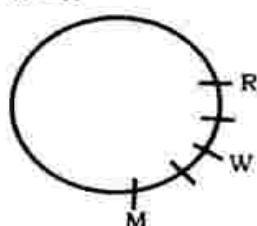
Sol. (i) T - P - - M



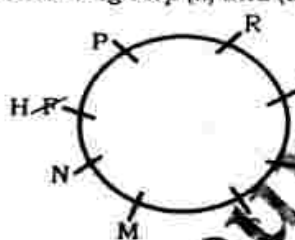
(ii) T - P - N M



(iii) M - W - R



(iv) Combining step (ii) and (iii)



Ans. 14. (1), 15. (5), 16. (4), 17. (4), 18. (3), 19. (1)

Directions (20 - 24): Study the following information carefully and answer the questions:

A, B, C, D, E, F, G and H are sitting around a circle facing the centre. A sits fourth to the right of H while second to the left of F. C is not the neighbour of F and B. D sits third to the right of C. H never sits next to G.

20. Which of the following pairs sit between H and G?

- (1) BH (2) EF (3) CE
(4) DB (5) None of these

21. Who sits second to the right of B?

- (1) A (2) C (3) D
(4) E (5) None of these

22. Which is the position of B with respect to C?

- (I) Second to the right
(II) Sixth to the left
(III) Third to the left
(IV) Fifth to the right
(1) Only II
(2) Only II and III
(3) Only I and IV
(4) Data inadequate
(5) Both III and IV

23. Who amongst the following sits between B and D?

- (1) G (2) F (3) H
(4) A (5) C

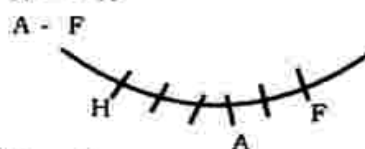
24. Who is to immediate right of A?

- (1) C (2) D (3) G
(4) Data inadequate
(5) None of these

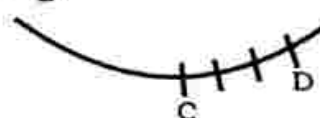
25. Four of the following are alike in a certain way based on their positions in the sitting arrangement and so form a group. Which is the one that does not belong to that group?

- (1) AE (2) HF (3) BD
(4) GE (5) CH

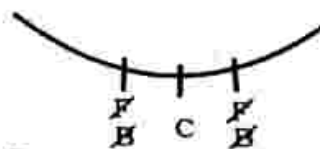
Sol. (i) H - - A



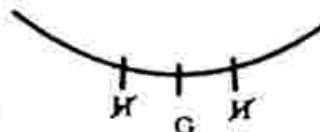
(ii) C - - D



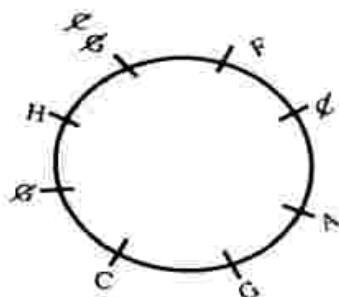
(iii) CF or FC or CB or BC (these combinations will not be entertained)



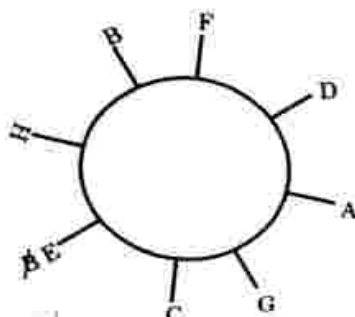
(iv) G H (both cannot be together)



(v)



- (vi) Only two places are left. Which will only be occupied by remaining members B and E. B cannot be near C hence E will be near C.



Ans. 20. (3), 21. (4), 22. (5), 23. (2), 24. (2), 25. (1)

Directions (26 - 30): Study the following information carefully and answer the question given below:

M, D, P, K, R, T and W are sitting around a circle facing the centre. D is second to the right of P who is third to the right of K. T is third to the right of W who is not an immediate neighbour of D. M is third to the left of R.

26. Who is second to the right of T?
 (1) D (2) K (3) M
 (4) Data inadequate
 (5) None of these
27. In which of the following pairs is the second person sitting to the immediate right of the first person?
 (1) DT (2) TP (3) PR
 (4) KW (5) None of these
28. Who is to the immediate left of R?
 (1) W (2) P (3) K
 (4) T (5) None of these

29. Who is to the immediate left of M?
 (1) K (2) W (3) D
 (4) T (5) None of these
30. Who is third to the left of D?
 (1) W (2) P (3) K
 (4) Data inadequate
 (5) None of these

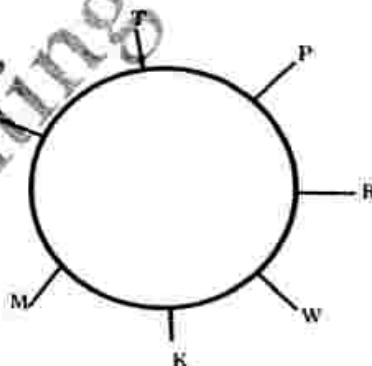
Sol. Step 1

Given statements

- (i) P - D (ii) K - P
 (iii) W - T (iv) WD × or DW ×
 (v) M - R

Step 2 Now start with the second Statement

Step 3 Plot the combinations



Ans. 26. (3), 27. (4), 28. (1), 29. (3), 30. (5)

Directions (31 - 35): Study the following information carefully and answer the questions given below:

Ten persons A, B, C, D, E, F, G, H, I and J, are sitting in two rows with five persons in each row in such a way that one person in the first row sits exactly opposite and facing a person in the second row. Members of the first row are facing North. B sits in the first row to the immediate right of H who sits exactly opposite of D. C is at the extreme end of second row and is second to the left of D. A is to the immediate right of D and exactly opposite to F. G sits exactly opposite to E who is at one of the ends of the second row. J does not sit at the end.

31. Who is second to the left of B?
 (1) I (2) G (3) H
 (4) F (5) None of these

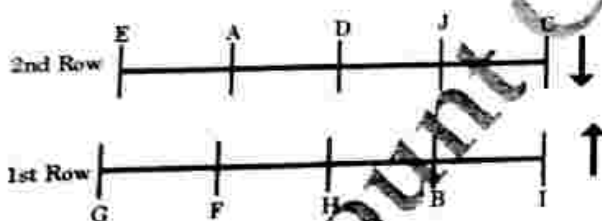
32. Which of the following pairs of persons are sitting at the two ends of the first row?
 (1) G & I (2) E & I (3) G & I
 (4) E & J (5) None of these
33. Who sits exactly opposite to B?
 (1) J (2) I (3) G
 (4) A (5) None of these
34. Who is third to the left of E?
 (1) D (2) I (3) H
 (4) C (5) None of these
35. A sits between which of the following persons?
 (1) D & J (2) E & D (3) F & B
 (4) B & I (5) None of these
36. Who is second to the left of C?
 (1) F (2) A (3) B
 (4) D (5) None of these
37. Which of the following group of persons sit in the same row?
 (1) H & E (2) A & C & B (3) C & D & I
 (4) H & I & G (5) None of these
38. Who is to the immediate right of B?
 (1) C (2) E (3) I
 (4) A (5) None of these
39. Who is to the immediate left of J?
 (1) I (2) C (3) E
 (4) B (5) None of these
40. Who sits exactly opposite of J?
 (1) H (2) A (3) F
 (4) C (5) None of these

Sol. Step 1 Note the given statements

- First Row is facing North.
- In first row HB and $H \leftrightarrow D$ (Opposite)
- C is at extreme of second row and $C _ D$
- D & A and $A \leftrightarrow F$ (opposite)
- $G \leftrightarrow E$ (opposite) and E is at one end of second row.
- J does not sit at the end.

Step 2 Start with any Row.

Step 3 Plot the arrangements



Ans. 31. (4), 32. (3), 33. (1), 34. (5), 35. (2)

Directions (36 - 40): These questions are based on the following information. Study it carefully and answer the questions.

Ten members A, B, C, D, E, F, G, H, I & J are split into two teams X & Y of 5 members each. Members in the two teams are made to sit in two rows facing each other in such a way that one member of team X is sitting exactly opposite of a member in team Y. Members of team X are facing North. D is third to the right of A and sits exactly opposite of G. B sits to the immediate right of G and is facing South. H is third to the right of B and is exactly opposite of F. C sits between A & E and is opposite of I.

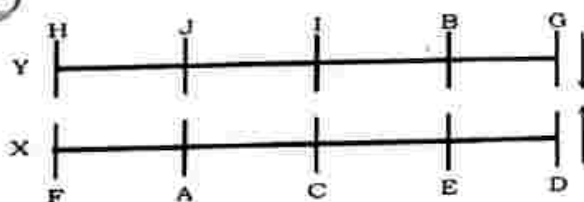
Sol. Step 1

Write the given Statements

- $A _ D$ or $D _ A$ and $D \leftrightarrow G$ (opposite)
- B & G facing South
- $H _ B$ and $H \leftrightarrow F$ (opposite)
- $A _ C _ E$ or $E _ C _ A$ and $C \leftrightarrow I$ (opposite)

Step 2 Start with the second statement

Step 3 plot the arrangements



Ans. 36. (1), 37. (4), 38. (3), 39. (1), 40. (2)

Exercise:

Directions (1 - 5): Study the following information carefully and answer the questions given below:

A, B, C, D, E, F, G and H are sitting around a circle facing the centre. D is fourth to the right of H and second to the left of B. F is fourth to the right of B. C is fourth to the right of E who is not immediate next to B or D. A is not an immediate neighbour of D.

- What is B's position with respect to G?
 (1) Third to the right
 (2) Third to the left
 (3) Fifth to the right
 (4) Fourth to the left
 (5) Fourth to the right

2. In which of the following combinations is the third person sitting in between the first and the second person?

(1) ABC (2) GCD (3) AHE
(4) CBA (5) EFG

3. Who is third to the right of A?

(1) H (2) E (3) F
(4) Data inadequate
(5) None of these

4. Who is to the immediate left of D?

(1) G (2) C (3) F
(4) Data inadequate (5) None of these

5. Who is fourth to the left of G?

(1) E (2) F (3) A
(4) Data inadequate (5) None of these

Directions (6 - 11): Study the following information carefully and answer the questions given below:

A, M, P, D, Q, R, W and B are sitting around a circle facing at the centre. D is fourth to the left of A who is third to the right of M. P is third to the left of Q who is third to the left of M. R is third to the right of W who is second to the right of B.

6. Who is second to the left of D?

(1) W (2) B (3) Q
(4) Data inadequate (5) None of these

7. Who is third to the left of P?

(1) M (2) D (3) A
(4) Data inadequate (5) None of these

8. Who is to the immediate right of Q?

(1) W (2) B (3) B
(4) Data inadequate (5) None of these

9. Which of the following pairs represents the first and second respectively to the right of W?

(1) DM (2) QB (3) MR
(4) Data inadequate (5) None of these

10. In which of the following pairs is the second person sitting to the immediate right of the first person?

(1) MD (2) RM (3) AB
(4) QB (5) None of these

11. Who is fourth to the right of R?

(1) P (2) A (3) B
(4) Data inadequate (5) None of these

Directions (12 - 16): Study the following information and answer the questions which follow:

(i) K, L, M, N, O, P and Q are sitting along a circular table facing the centre.

(ii) L sits between N and O.

(iii) K is third to the left of O.

(iv) Q is second to the left of M who is to the immediate left of P.

12. Which of the following pairs has the first person sitting to the immediate left of the second person?

(1) LO (2) MN (3) QN
(4) LN (5) None of these

13. Which is the correct position of L with respect of O?

(1) Second to the right
(2) First to the left
(3) First to the right
(4) Third to the right
(5) None of these

14. Which of the following has the middle person sitting between the other two?

(1) NQI (2) PMK (3) POK
(4) MOP (5) None of these

15. Who sits second to the left of L?

(1) P (2) M (3) K
(4) Q (5) None of these

16. Who sits between M and Q?

(1) O (2) N (3) K
(4) L (5) None of these

Directions (17 - 22): Study the following information carefully and answer the questions given below:

P, A, D, Q, T, M, R and B are sitting around a circle facing at the centre. D is third to the left of T who is fifth to the right of P. A is third to the right of B who is second to the right of D. Q is second to the left of M.

17. Who is second to the right of M?

(1) B (2) R (3) T
(4) Q (5) None of these

18. Who is to the immediate right of D?

(1) M (2) Q (3) B
(4) Data inadequate (5) None of these

19. Who is third to the right of P?
 (1) D (2) M (3) R
 (4) Data inadequate (5) None of these

20. Who is second to the left of D?
 (1) A (2) Q (3) B
 (4) P (5) Data inadequate

21. In which of the following pairs the first person is sitting to the immediate right of the second person?
 (1) DM (2) BT (3) RA
 (4) PQ (5) PA

22. Which of the following pairs represents the immediate neighbours of A?
 (1) PT (2) PB (3) TQ
 (4) PD (5) None of these

Directions (23 - 28): Study the following information carefully and answer the questions given below:

A, B, C, D, E, F, G and H are sitting around a circle facing the centre. H is fourth to the left of and second to the right of F. A is third to the left of C, who is not an immediate neighbour of F. G is second to the left of A. D is second to the right of

23. Who is on the immediate right of F?
 (1) H (2) A (3) G
 (4) Data inadequate (5) None of these

24. Who is third to the left of A?
 (1) C (2) F (3) B
 (4) Data inadequate (5) None of these

25. In which of the following pairs is the first person sitting on the immediate left of the second person?
 (1) EH (2) CE (3) AF
 (4) DB (5) None of these

26. Which of the following pairs represents the immediate neighbours of E?
 (1) DH (2) HC (3) CA
 (4) Data inadequate (5) None of these

27. Who is on the immediate right of H?
 (1) E (2) C (3) B
 (4) Data inadequate (5) None of these

28. Who is on the immediate right of B?
 (1) D (2) E (3) F
 (4) Data inadequate (5) None of these

Directions (29 - 33): Study the following information carefully and answer the questions given below:

M, P, J, B, R, T and F are sitting around a circle facing the centre. B is third to the left of J who is second to the left of M. P is third to the left of B and second to the right of R. T is not an immediate neighbour of M.

29. Who is fourth to the right of M?
 (1) B (2) T (3) J
 (4) Data inadequate (5) None of these

30. Who is second to the left of T?
 (1) F (2) M (3) P
 (4) J (5) Data inadequate

31. In which of the following pairs the second person is sitting to the immediate right of the first person?
 (1) JR (2) PJ (3) TR
 (4) MP (5) None of these

32. What is F's position with respect to R?
 (A) Third to the left
 (B) Fourth to the right
 (C) Third to the right
 (1) Only (A) (2) Only (B) (3) Only (C)
 (4) Both (A) and (B)
 (5) None of these

33. Who is third to the right of B?
 (1) R (2) J (3) M
 (4) Data inadequate (5) None of these

Directions (34 - 38): Study the information given below and answer these questions:

(i) P, Q, R, S, T, U and V are sitting along a circle facing the centre.

(ii) P is between V and S.

(iii) R who is second to the right of S, is between Q and U.

(iv) Q is not the neighbour of T.

34. Which of the following is correct statement?
 (1) V is between P and S
 (2) S is second to the left of V
 (3) R is third to the left of P
 (4) P is to the immediate left of S
 (5) None of these

35. What is the position of T?
- Between R and V
 - Immediate left of V
 - Second to the left of R
 - Second to the right of P
 - None of these
36. Who is between R and U?
- None
 - S
 - V
 - Q
 - None of these
37. Which of the following is wrong statement?
- R is to the immediate left of U
 - Q is to the immediate left of R
 - T is third to the right of Q
 - U is second to the left of T
 - None of these
38. Which of the following pairs has second member sitting to the immediate right of the first member
- QS
 - PV
 - RU
 - VT
 - None of these

Directions (39 - 43): Study the following information carefully and answer the questions given below:

P, Q, R, S, T, V and W are sitting around a circle facing the centre. V is second to the left of P and second to the right of T. T is third to the right of Q and is not an immediate neighbour of V. S is third to the right of R.

39. Who is second to the right of T?
- R
 - W
 - T
 - S
 - None of these
40. Who is to the immediate left of S?
- V
 - T
 - Q
 - W
 - None of these
41. Who is to the immediate right of R?
- W
 - T
 - P
 - Data inadequate
 - None of these
42. Which of the following groups is the first person sitting between the second and the third person?
- RPQ
 - TWS
 - QPR
 - QVS
 - None of these
43. Who is third to the left of V?
- T
 - S
 - W
 - R
 - None of these

Directions (44 - 48): Study the following information carefully and answer the given questions:

A, B, C, D, E, F, G and H are eight friends sitting around a circular table facing the centre. A sits second to the left of D who is third to the left of E. C sits third to the right of G who is not an immediate neighbour of E. H sits third to the right of B who sits second to the right of F.

44. Who sits between D and C?
- Only B
 - Only E and A
 - Only C
 - Only F
 - Only G and H
45. Who sits second to the right of E?
- B
 - F
 - G
 - C
 - None of these
46. What is the position of A with respect to H?
- Third to the left
 - Third to the right
 - Second to the left
 - Second to the right
 - Fourth to the left

Four of the following five are alike based upon their seating arrangements and so form a group. Which is the one that does not belong to that group?

- CH
 - FG
 - DA
 - BE
 - GB
48. Which of the following pairs has the second person sitting to the immediate left of the first person?
- DB
 - EH
 - FA
 - GD
 - None of these

Directions (49 - 53): Study the following information carefully and answer the questions given below:

P, Q, R, S, T, U, V and W are sitting around a circle facing the centre. T is second to the left of P and third to the right of V. S is second to the right of W who is to the immediate right of T. Q is third to the right of U.

49. In which of the following pairs is the third person sitting in between the first and the second persons?
- USP
 - VRU
 - TQW
 - WPS
 - None of these
50. Who is to the immediate left of T?
- Q
 - W
 - R
 - Data inadequate
 - None of these

51. Who is second to the right of P?
 (1) S (2) V (3) U
 (4) Q (5) Data inadequate
52. What is R's position with respect to W?
 (1) Third to the left
 (2) Fourth to the left
 (3) Sixth to the right
 (4) Fifth to the left
 (5) None of these
53. Who is fourth to the left of R?
 (1) U (2) P (3) S (4) W (5) None of these

Directions (54 - 55): Study the following information carefully and answer the questions given below:

Six friends P, Q, R, S, T and U are standing in a row. Q is exactly in between U and S. T is standing in between P and R. P is not a neighbour of S and U. R is not a neighbour of S.

54. U is standing in between which of the following pair?
 (1) Q and R (2) Q and S (3) Q and P
 (4) R and P (5) None of these
55. R is standing in between which of the following?
 (1) S and U (2) T and Q (3) T and U
 (4) P and T (5) None of these

Directions (56 - 60): Study the following information carefully and answer the questions given below:

Six friends A, B, C, D, E and F are in two rows, each row having three friends facing each other and standing in such a way that-

- (i) F is second to the right of C.
 (ii) A is at the end of a row.
 (iii) E is the neighbour of B.
 (iv) C is exactly in front of B.

56. Which of the following pair is not facing each other?
 (1) A, E (2) C, B (3) E, D
 (4) F, A (5) None of these
57. Which of the following statement is true?
 (1) A is second to the left of C.
 (2) E is to the left of B.
 (3) C and B are diagonally opposite to each other.
 (4) D is to the right of A.
 (5) None of these

58. Which of the following people are standing opposite to each other?
 (1) A, B (2) D, E (3) C, F
 (4) A, D (5) None of these

59. Which of the following are standing in a row?
 (1) A, B and F (2) E, B and A
 (3) A, C and E (4) B, F and D
 (5) None of these

60. If A and B exchange their places with each other, who will be exactly left of B?
 (1) D (2) E (3) F
 (4) C (5) None of these

Directions (61 - 65): Study the following information carefully and answer the questions given below:

- (i) A, B, C, D, E and T are standing in a row facing South.
 (ii) A is third to the right of E.
 (iii) C is fourth from one end of the row.
 (iv) B who is in between A and D, is third to the right of T.

61. Which pair of the following is at the two ends of the row?
 (1) D and C (2) A and E
 (3) T and D (4) T and E
 (5) None of these

62. What is the position of E?
 (1) Immediate right of T
 (2) Right end of the row
 (3) Fifth to the left of D
 (4) In between C and T
 (5) None of these

63. Which of the following is true?
 (1) A is immediate left of C
 (2) E is immediate right of T
 (3) C is in between T and E
 (4) C is second to the right of B
 (5) None of these

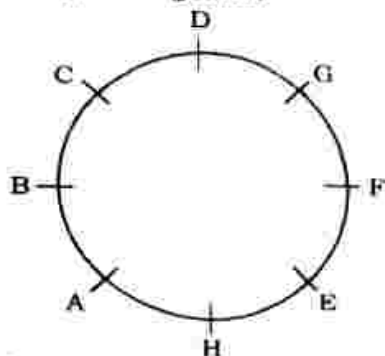
64. Which of the following is not true?
 (1) D is immediate left of B
 (2) D is at one end of the row
 (3) E is at one end of the row
 (4) A and C are neighbours
 (5) There is no one between C and T

65. Which of the following pair represents two members standing near each other? (17 - 22):

- (1) D, B and A, T
- (2) A, B and E, T
- (3) A, C and E, D
- (4) E, C and T, C
- (5) None of these

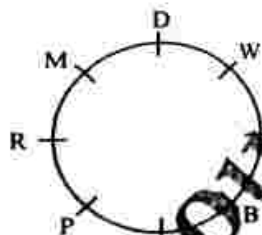
Answers with Explanation:-

(1 - 5): Sitting Arrangement



1. 1; B is third to the right of G.
2. 2; D is sitting between G and C.
3. 3; F is third to right of A.
4. 1; G is to the immediate left of D.
5. 3; A is fourth to the left of G.

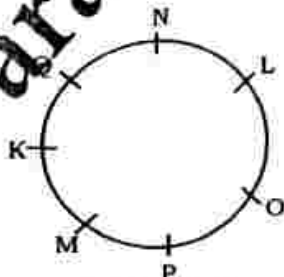
(6 - 11):



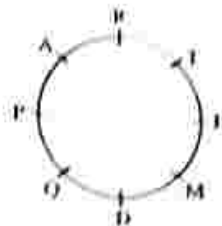
6. 3 7. 2 8. 1 9. 1 10. 3

11. 5 (Ans. is 5)

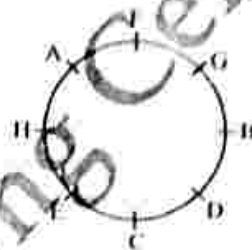
(12 - 16):



12. 4 13. 5 (2nd from left)
14. 2 15. 1 16. 3

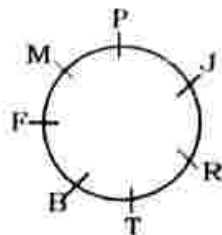


17. 3 18. 1 19. 2 20. 4 21. 5
22. 5; P and R are immediate neighbours of A.
(23 - 28):

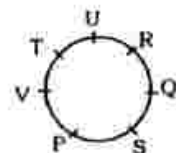


23. 2 24. 3 25. 4 26. 2 27. 1
28. 5 (Answer is G)

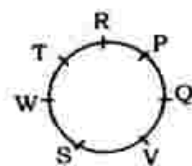
(29 - 33):



29. 5 (Ans. is R) 30. 1 31. 3 32. 4 33. 2
(34 - 38):

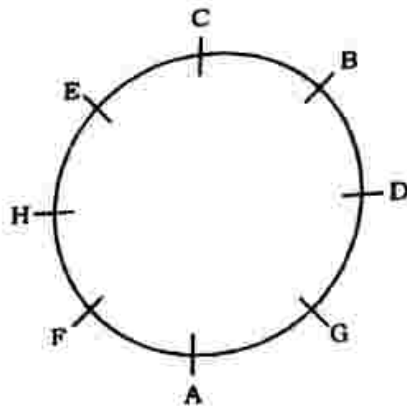


34. 4 35. 2 36. 1 37. 4 38. 3
(39 - 43):



39. 1 40. 4 41. 2 42. 5 43. 1

(44 - 48):

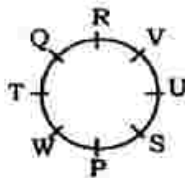


44. 1 45. 2 46. 4

47. 3; In all others, the second person is second to the right of the first.

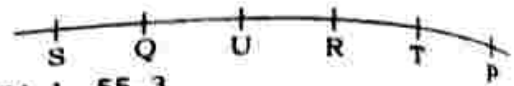
48. 5

(49 - 53):



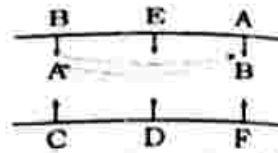
(54 - 55):

49. 5 50. 1 51. 3 52. 1



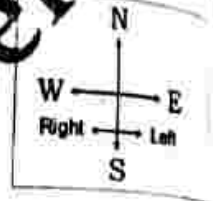
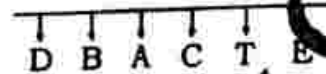
54. 1 55. 3

(56 - 60):



56. 1 57. 2 58. 2 59. 2 60. 5

(61 - 65):



61. 5 (D and B)
62. 3 63. 5 64. 1 65. 2

Paramount Coaching Centre

10

SITTING ARRANGEMENT QUESTIONS BASED ON LATEST PATTERN

Directions (1 - 5): Study the following information carefully and answer the given questions.

A, B, C, D, E, F, G and H are sitting around a circular table facing the centre. Each one of them has a different profession viz. doctor, engineer, architect, teacher, clerk, shopkeeper, businessman and banker.

A sits third to right of teacher. D sits second to left of G. G is not an immediate neighbour of the teacher. Only one person sits between B who is the shopkeeper and teacher. The one who is an architect sits third to the right of the shopkeeper. H sits between architect and engineer. E is not an immediate neighbour of H. Engineer sits third to the right of clerk. Only one person sits between businessman and F. E is neither a businessman nor a doctor.

1. Which of the following is **true** with respect of the given seating arrangement?
 - (1) E is an immediate neighbour of the engineer.
 - (2) E is an architect
 - (3) The clerk is an immediate neighbour of the banker.
 - (4) The teacher sits between F and the engineer
 - (5) Shopkeeper sits second to the right of the teacher.
2. What is the profession of H?
 - (1) Businessman
 - (2) Architect
 - (3) Banker
 - (4) Teacher
 - (5) Shopkeeper
3. What is the position of doctor with respect to the banker?
 - (1) Immediately to the left
 - (2) Third to the left
 - (3) Second to the right
 - (4) Fourth to the left
 - (5) Second to the left.
4. Who sit(s) exactly between the architect and the businessman?
 - (1) C and H
 - (2) Clerk
 - (3) Banker and shopkeeper

- (4) Doctor
 - (5) C and teacher
5. Who amongst the following is a clerk?
 - (1) C
 - (2) D
 - (3) E
 - (4) F
 - (5) G

Directions (6 - 10): Study the following information carefully and answer the given questions.

Twelve people are sitting in two parallel rows containing six people each, in such a way that there is an equal distance between adjacent persons. In row-1, P, Q, R, S, T and V are seated and all of them are facing South. In row-2, A, B, C, D, E and F are seated and all of them are facing North. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row.

P sits third to the left of T. Neither P nor T sits at an extreme end of the line. A sits second to the right of E. Neither A nor E faces T or P. A does not sit at an extreme end. R does not face A and R does not sit at an extreme end of the line. Only one person sits between F and C. Neither F nor C faces T. C does not sit at the extreme end. Only one person sits between V and Q. F is not an immediate neighbour of B and A does not face V.

6. How many persons are seated between B and D?
 - (1) One
 - (2) Two
 - (3) Three
 - (4) Four
 - (5) None
7. V is related to B in the same way as Q is related to C. To which of the following is P related following the same pattern?
 - (1) F
 - (2) A
 - (3) D
 - (4) E
 - (5) None of these
8. Which of the following is **true** regarding V?
 - (1) V faces A
 - (2) T is not an immediate neighbour of V
 - (3) C faces the one who is second to left of V
 - (4) V sits at one of the extreme ends of the line
 - (5) R sits third to the right of V

9. Who amongst the following sit at extreme ends of the rows?

(1) D, F (2) V, S (3) Q, S
(4) B, D (5) None of these

10. Who amongst the following faces B?

(1) V (2) S (3) Q
(4) R (5) T

Directions (11 - 16): Study the following information carefully and answer the given questions.

J, P, Q, R, S, T, U and V are 4 married couple sitting in a circle facing the centre. The profession of the males within the group are lecturer, lawyer, doctor and scientist. Among the males, only R (the lawyer) and V (the scientist) are sitting together. Each man is seated besides his wife. U, the wife of the Lecturer is seated second to the right of V. T is seated between U and V. P is the wife of the Doctor. Q is a male but he is not doctor. S is a Male.

11. Which of the following is P's position with respect to S?

(1) Second to the right
(2) Second to the left
(3) Immediate right
(4) Immediate left
(5) Third to the left

12. Which of the following is J's position with respect to T?

(1) Third to the left
(2) Fourth to the right
(3) Third to the right
(4) Opposite T
(5) Second to the right

13. Which of the following is **not true** regarding the couples?

(1) P is the wife of S
(2) T is the wife of Q
(3) R is the husband of J
(4) J and S are seated adjacent to each other
(5) All are true

14. The wives of which two husband are immediate neighbours?

(1) UT (2) SR (3) VQ
(4) RV (5) None of these

15. Four of the following are alike in a certain way based on their seating position in the above arrangement and so form a group. Which is the one that **does not** belong to the group?

(1) RSJ (2) TRV (3) UTV
(4) SQP (5) UPQ

16. Who is the Lawyer's wife?

(1) T (2) P (3) J
(4) U (5) None of these

Directions (17 - 21): Study the following information carefully and answer the given questions.

Seven people A, B, C, D, E, F and G are sitting in a circle. Five of them are facing the centre while two of them are facing opposite to the centre. C sits third to the left of B and both are facing the centre. E is neither an immediate neighbour of D nor of C. The one sitting exactly between D and F is facing opposite to the centre. G sits third to the right of A and G is facing the centre. One of B's neighbour is facing opposite to the centre.

17. Which of the following pairs represents persons, facing opposite to the centre?

(1) A and F (2) E and F (3) A and E
(4) Cannot be determined
(5) None of these

18. Who is sitting second to the left of A?

(1) C (2) G (3) E
(4) B (5) None of these

19. Who is sitting to the immediate left of E?

(1) C (2) G (3) B
(4) A (5) None of these

20. What is the position of F with respect to B?

(1) Fourth to the left
(2) Second to the right
(3) Third to the right
(4) Second to the left
(5) None of these

21. If all the persons are asked to sit in a clockwise direction in an alphabetical order starting from A, the position of how many will remain unchanged, excluding A?

(1) Three (2) One (3) Two
(4) None (5) Four

Directions (22 - 26): Study the following information carefully and answer the given questions.

Eight friends P, Q, R, S, T, V, W and Y are sitting around a square table in such a way that four of them sit at four corners of the square while four sit in the middle of each of the four sides. The ones who sit at the four corners face the centre while those who sit in the middle of the sides face outside.

P who faces the centre sits third to the right of V. T who faces the centre, is not an immediate neighbour of V. Only one person sits between V and W. S sits second to right of Q. Q faces the centre. R is not an immediate neighbour of P.

22. Who sits second to the left of Q?
(1) V (2) P (3) T
(4) Y (5) Cannot be determined
23. What is the position of T with respect to V?
(1) Fourth to the left
(2) Second to the left
(3) Third to the left
(4) Third to the right
(5) Second to the right
24. Four to the following five pairs are alike in a certain way based on their positions in the above arrangement and so form a group. Which of the following does not belong to the group?
(1) R (2) V (3) V
(4) S (5) Y
25. Which of the following will come in place of the question mark based upon the given seating arrangement?
WP TR OW RS ?
(1) T (2) VY (3) VQ
(4) PY (5) QV
26. Which of the following is true regarding R?
(1) R is an immediate neighbour of V
(2) R faces the centre
(3) R sits exactly between T and S
(4) Q sits third to left of R
(5) None is true

Directions (27 - 31): Study the following information carefully and answer the given questions.

Twelve people are sitting in two parallel rows containing six people each, in such a way that there is an equal distance between adjacent persons. In row-1; P, Q, R, S, T and V are seated and all of them are facing South. In row-2; A, B, C, D, E and F are seated and all of them are facing North. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row.

A sits third to right of F. Neither A nor D sits at extreme ends. T faces D. V does not face A and V does not sit at any of the extreme ends. V is not an immediate neighbour of F. F sits at one of the extreme ends. Only two people sit between B and E. E does not face V. Two persons sit between R and Q. R is not an immediate neighbour of T. C does not face V. P is not an immediate neighbour of R.

27. Who amongst the following sit at extreme ends of the rows?
(1) B, E (2) S, T (3) P, R
(4) B, F (5) None of these
28. Who amongst the following faces A?
(1) R (2) T (3) P
(4) Q (5) S
29. P is related to V in the same way as C is related to F. To which of the following is E related in the same Pattern?
(1) B (2) D (3) C
(4) A (5) None of these
30. Which of the following is true regarding F?
(1) F sits second to right of C
(2) F is not an immediate neighbour of A
(3) F sits third to left of D
(4) F sits at one of the extreme ends of the line
(5) F faces V
31. Who amongst the following sits exactly between P and Q?
(1) R (2) V (3) S
(4) T (5) Cannot be determined

Directions (32 - 36): Study the following information carefully and answer the given questions.

Eight people - S, R, N, L, M, T, O and P are sitting in a circle facing the centre. All eight belong to different professions- reporter, doctor, cricketer, teacher, accountant, shopkeeper, painter and supervisor. They are not necessarily seated in the mentioned order.

M is sitting third to the left of O. The doctor is to the immediate right of M and M is not a reporter. R is sitting fourth to the right of P. Neither R nor P is an immediate neighbour of M. T is a teacher and is sitting third to the right of the doctor. The shopkeeper is sitting second to the left of the teacher. The painter is sitting second to the left of M. S the cricketer is sitting exactly between T and P. The accountant is sitting second to the right of the cricketer. N is sitting third to the left of T.

32. Who amongst the following is a reporter?
(1) O (2) L (3) N
(4) R (5) None of these
33. What is S's position with respect to R?
(1) Third to the right
(2) Second to the right
(3) Third to the left
(4) Second to the left
(5) Fourth to the right
34. How many people are sitting between P and N when counted in an anti clockwise direction from N?
(1) One (2) Two (3) Three
(4) Four (5) None
35. Four to the following five pairs are alike in a certain way based on their positions in the above arrangement and so form a group. Which of the following **does not** belong to the group?
(1) Teacher - painter
(2) Supervisor - Shopkeeper
(3) Cricketer - Reporter
(4) Doctor - Accountant
(5) Shopkeeper - Doctor
36. Which one of the following statements is false according to the above mentioned arrangement?

- (1) N is to the immediate right of the supervisor
- (2) The cricketer is third to the right of the shopkeeper
- (3) The doctor is sitting exactly between the supervisor and the accountant
- (4) L is neither a teacher nor a supervisor
- (5) There are only three people between S and N

Directions (37 - 42): Study the following information carefully and answer the given questions.

K, L, M, P, Q, R, S and T are sitting around a square table in such a way that four of them sit at four corners of the square while four sit in the middle of each of the four sides. The ones who sit at the four corners face outside while those who sit in the middle of the sides face the centre of the table.

P sits third to the right of S. S faces the centre. Q sits third to the left of M. M does not sit in the middle of the sides. Only one person sits between Q and R. R is not an immediate neighbour of M. T faces the centre. K is not an immediate neighbour of R.

37. What is position of M with respect to L?
(1) Third to the right
(2) M and L sit diagonally opposite to each other
(3) Second to the right
(4) Second to the left
(5) Fifth to the right
38. Who sits exactly between Q and R?
(1) T (2) P (3) K
(4) M (5) S and K
39. Which of the following pairs represents the persons seated in the middle of the sides who face each other?
(1) S, Q (2) K, L (3) M, P
(4) R, T (5) T, Q
40. Who amongst the following sit between R and K when counted in anti-clockwise direction from K?
(1) No one sits between R and K as R and K are immediate neighbours of each other
(2) S, P and L (3) P and Q
(4) L and R (5) M, S and T

41. If K is made to face the opposite direction, who would sit to his immediate right?

(1) R (2) Q (3) P
(4) T (5) S

42. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?

(1) L (2) M (3) K
(4) P (5) R

Directions (43 - 47): Study the following information carefully and answer the given questions:

A, B, C, D, E, F, G and H are sitting around a square table facing the centre in such a way that four of them sit at four corners of the square while four sit in the middles of each of the four sides:

- (a) A sits second to right of F, F sits in the middle of one of the sides of the table.
(b) G who does not sit at any of the corners of the table sits second to the right of D
(c) Only two people sit between D and B (taken from one side)
(d) C is not an immediate neighbour of G
(e) H sits second to left of B
(f) E is not an immediate neighbour of G or F.

43. Who sits exactly between F and D?

(1) B (2) C (3) E
(4) H (5) None of these

44. How many persons sit between A and H when counted in an anti-clockwise direction from A?

(1) None (2) One (3) Two
(4) Three (5) Four

45. Four of the following five are alike in a certain way based on their seating positions in the above arrangement and so form a group. Which is the one that does not belong to the group?

(1) D (2) F (3) A
(4) E (5) G

46. What is the position of F with respect to C?

(1) Third to the left
(2) Immediate to the right
(3) Second to the left
(4) Third to the right
(5) Immediate to the left

47. What will come in the place of the question mark (?) based upon the given seating arrangement?

AE EH HF ?

(1) FE (2) HC (3) FD
(4) DB (5) FH

Directions (48 - 52): Read the following information carefully and answer the questions which follow :-

A, B, C, D, E, F, G and H study in different standards viz. 1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th. All of them are seated around a circular table facing the centre.

C sits third to right of H. H studies in std. 8th. F sits second to left of E. E is not an immediate neighbour of C or H. The one who studies in std. 1 is an immediate neighbour of E. Three people sit between H and the student of std. 7.

H, C and also their immediate neighbours do not study in std. 2. Only one person sits between the student of std. 2 and G. Students of std. 3 and 4 are immediate neighbours of each other. C is neither in std. 4 nor in std. 3. Only one person sits between A and the student of std. 5. A does not study in std. 2 or 3. B does not study in std. 2.

48. Who amongst the following represent immediate neighbour of G?

(1) A, B
(2) E and the student of Std. 2
(3) H and the student of std. 6
(4) E, F
(5) A, D

49. How many persons sit between D and the student of std. 4, when counted from the left hand side of student of std. 4?

(1) None (2) One (3) Two
(4) Three (5) Four

50. Which of the following is true?

(1) Only one person is sitting between student of std. 4 and std. 6
(2) D studies in std. 2
(3) The one studying in std. 3 is an immediate neighbour of H
(4) One person sits between H and the student of std. 2
(5) None is true

51. Which of the following is true regarding F?
- (1) F studies in std. 5
 - (2) D and G are immediate neighbours of F
 - (3) One student sits between F and the student of std. 4.
 - (4) F sits second to right of A
 - (5) None is true

52. Who amongst the following studies in std. 3?
- (1) C
 - (2) F
 - (3) G
 - (4) B
 - (5) Cannot be determined

Directions (53 - 55): Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to that group?

53. (1) ED (2) FC (3) AH
(4) EG (5) CB
54. (1) BAH (2) EDG (3) CBF
(4) HGA (5) DFE

55. What will come in the place of the question mark?

G D B A ?

- (1) E
- (2) F
- (3) C
- (4) H
- (5) A

Directions (56 - 62): Study the following information carefully and answer the given questions:

Twelve people are sitting in two parallel rows containing six people each, in such a way that there is an equal distance between adjacent persons. In row - 1 A, B, C, D, E and F are seated and all of them are facing South. In row - 2 P, Q, R, S, T and V are seated and all of them are facing North. Therefore, the given seating arrangement each member seated in a row faces another member of the other row.

V sits third to right of S. S faces F and F does not sit at any of the extreme ends of the line. A sits third to right of C. R faces C. The one facing E sits third to right of P. B and P do not sit at the extreme ends of the line. T is not an immediate neighbour of V and R is not an immediate neighbour of C.

56. Which of the following is true regarding B?
- (1) B sits to the immediate left of C
 - (2) B faces Q
 - (3) B sits fourth from the extreme left end of the line
 - (4) D and F are immediate neighbours of B
 - (5) None is true

57. Who amongst the following faces D?

- (1) T
- (2) P
- (3) Q
- (4) R
- (5) None of these

58. Four of the following five are alike in a certain way and thus form a group. Which is the one that does not belong to that group?

- (1) D
- (2) S
- (3) V
- (4) T
- (5) A

59. Who amongst the following represent the people sitting at extreme ends of the row?

- (1) R, F
- (2) T, A
- (3) D, R
- (4) C, Q
- (5) S, A

60. Who amongst the following faces Q?

- (1) D
- (2) B
- (3) E
- (4) A
- (5) None of these

61. Four of the following five are alike in a certain way and thus form a group, which is the one that does not belong to that group?

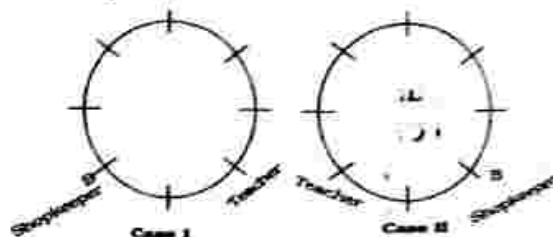
- (1) V-T
- (2) A-Q
- (3) C-S
- (4) F-P
- (5) D-R

62. How many persons are seated between R and T?

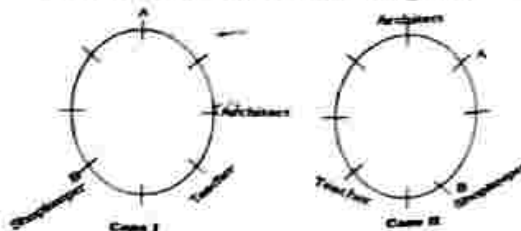
- (1) One
- (2) Two
- (3) Three
- (4) Four
- (5) None

Answer with explanation:

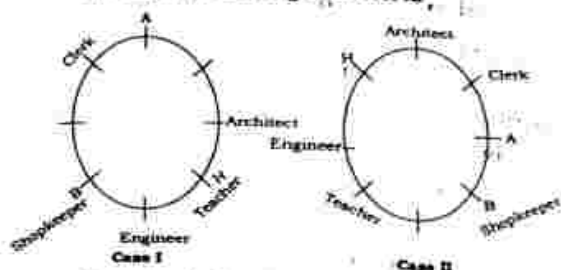
- 1 - 5: We have information that only one person sits between B who is the shopkeeper and the teacher.



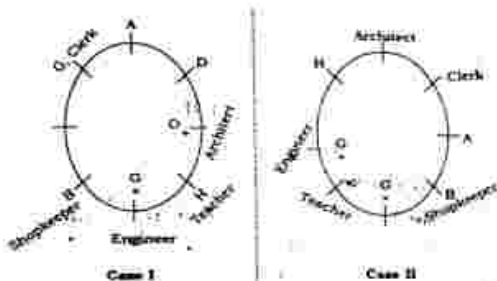
Now, we have information that the one who is an architect sits third to right of the shopkeeper. Also, A sits third to right of teacher.



Now, we have information that H sits between architect and Engineers. Also, the engineer sits third to the right of clerk.

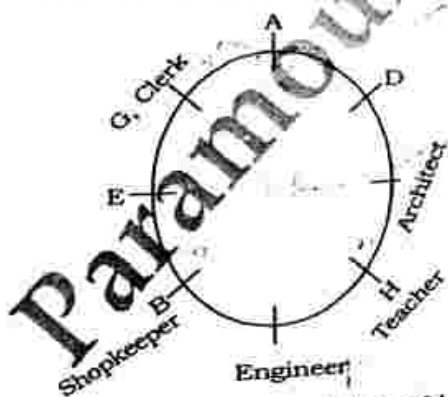


Now, look for the positions of D and G. We know, D sits second to the left of G. Also, G is not an immediate neighbour of the teacher.



Reject Case II, because we can't place D and G according to the given conditions.

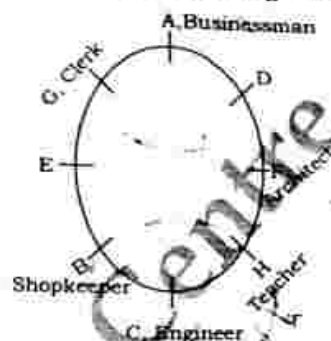
Now, look for the positions of E. Since E is not immediate neighbour of H, hence we can conclude that E is sitting between B and G.



Now, look for the positions of businessman and F. We have information that only one person is sitting between businessman and F. Also, E is neither businessman nor a doctor.

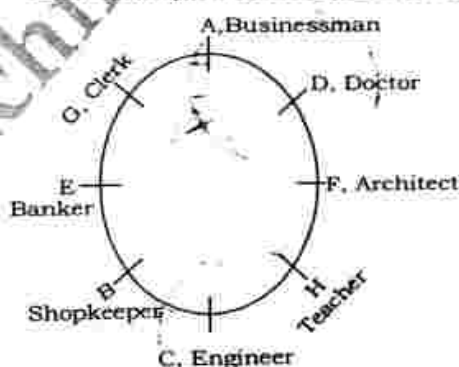
A careful look will be helpful to

conclude that A is a businessman and F is an architect. Thus by elimination we can conclude that C is an Engineer.



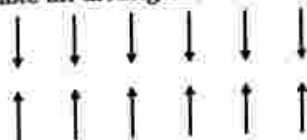
Now, since E is not a doctor, we can conclude that it is D who is a doctor, whereas E is a banker.

Thus, the complete information is as follows:



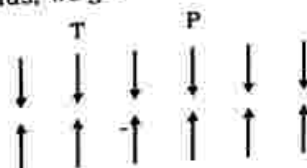
1. 3 2. 4 3. 2 4. 4 5. 5

6 - 10: Make an arrangement as shown below:



Look for the positions of P and T. We have information that P sits third to left of T. Also, Neither P nor T sits at an extreme end of the line.

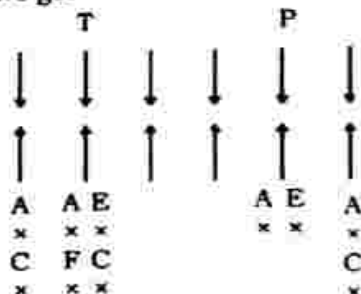
Thus, we get



Use the following clues to proceed.

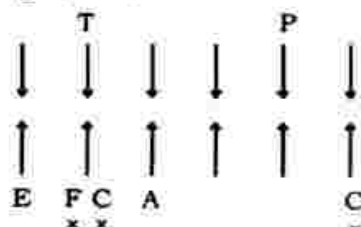
- Neither A nor E faces T or P.
- A does not sit at an extreme end.
- Neither F nor C faces T.
- C does not sit at the extreme end.

Now, we get



Now, look for the positions of E and A. We know A sits second to the right of E. i.e. E - A.

We get,



Now, arrange the position of F and C. We know that only one person is sitting between F and C. Thus the order of F and C will be

1. F - C

Or,

2. C - F

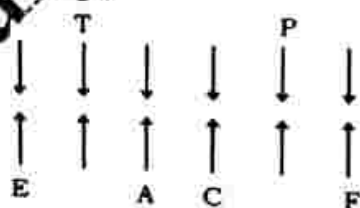
We can't accommodate F and C in this order 11 - 16:

1. F - C

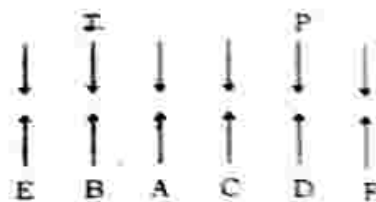
Thus, The order of F and C will be as

C - F

Hence, we get



Again, since F is not immediate neighbour of B, thus we can conclude that B is sitting between E and A. Thus, 'D' the only person left in the row (facing North) is sitting between C and F.



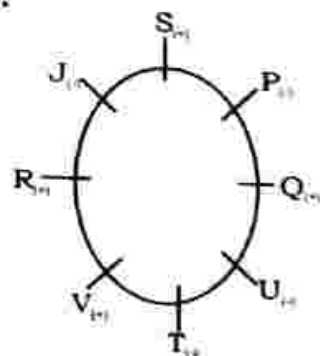
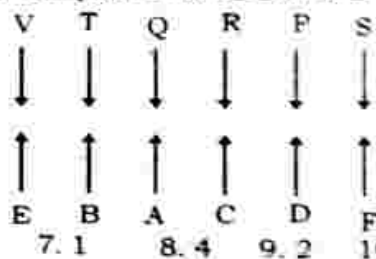
Now, look for R's position in the row. We have information that R does not face A and R does not sit at an extreme end of the line. Thus, we can conclude that R is sitting opposite C.



Now, look for the position of Q and V. We know that only one person is sitting between V and Q. Also, A does not face V.

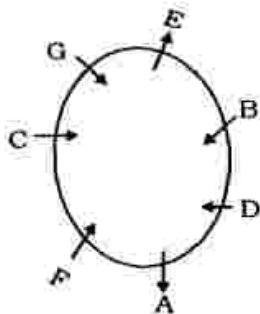
On the basis of the above information we can conclude that V is sitting opposite E where as Q is sitting opposite A.

Now, the only person left in the row (facing south) is S. S is sitting opposite F. Thus, the complete information is as follow:



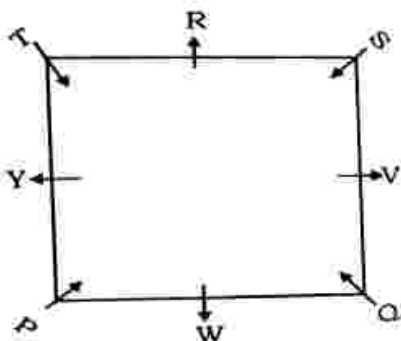
R ₍₁₎ [Lawyer]	↔	J ₍₁₎			
V ₍₁₎ [Scientist]	↔	T ₍₁₎			
Q ₍₁₎ [Lecturer]	↔	U ₍₁₎			
S ₍₁₎ [Doctor]	↔	P ₍₁₎			
11. 4	12. 1	13. 2	14. 3	15. 3	16. 3

17 - 21:



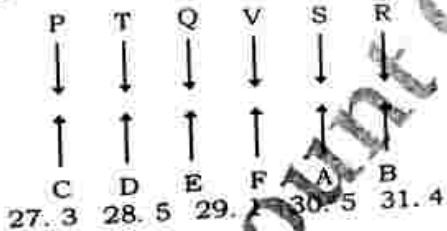
17. 3 18. 4 19. 2 20. 5 21. 3

22 - 26:

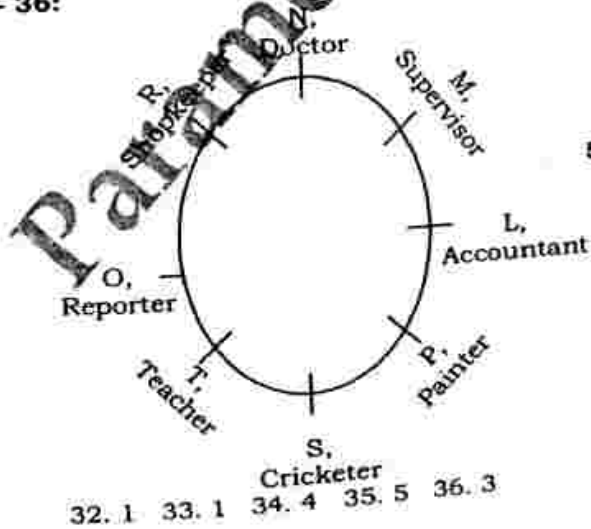


22. 2 23. 3 24. 4 25. 1 26. 3

27 - 32:

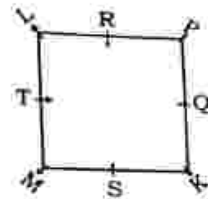


32 - 36:



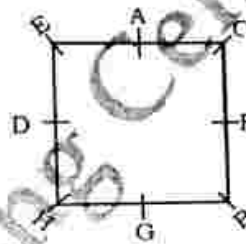
32. 1 33. 1 34. 4 35. 5 36. 3

37 - 42:



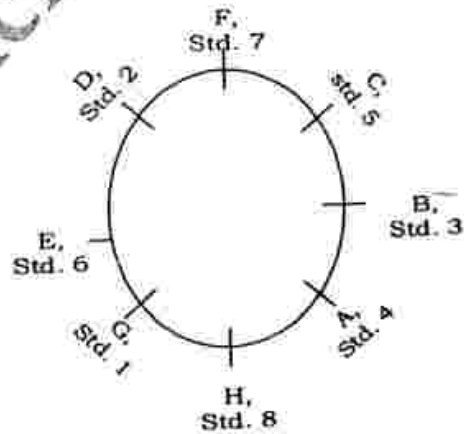
37. 4 38. 2 39. 5 40. 3 41. 5 42. 5

43 - 47:



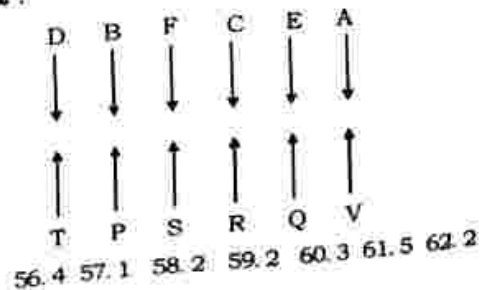
43. 2 44. 3 45. 4 46. 5 47. 3

48 - 55:



48. 3 49. 4 50. 2 51. 4 52. 4
53. 4 54. 1 55. 3

56 - 62:



56. 4 57. 1 58. 2 59. 2 60. 3 61. 5 62. 2

1. Nitin ranks eighteenth in a class of 49 students. What is his rank from the last?
(1) 18 (2) 19 (3) 31
(4) 32 (5) None of these
2. Manoj and Sachin are ranked seventh and eleventh respectively from the top in a class of 31 students. What will be their respective ranks from the bottom in the class?
(1) 20th and 24th
(2) 24th and 20th
(3) 25th and 21st
(4) 26th and 22nd
(5) None of these
3. Mohan is thirteenth from the left end in a row of children. Prabir is twelfth from the right end and eighteenth from the left end. How many children are towards the right of Mohan in that row?
(1) 12 (2) 18 (3) 17
(4) Can't be determined
(5) None of these
4. In a row of children A is 13th from the left and D is 17th from the right. If in this row A is 11th from the right then what is the position of D from the left?
(1) 12th (2) 7th (3) 10th
(4) 6th (5) None of these
5. In a row of boys Mohan is twentieth from the left end and twelfth from the right end. Pratap is fifth from the right end in that row. How many boys are there between Mohan and Pratap?
(1) 4 (2) 2 (3) 3
(4) 5 (5) None of these
6. In a row of students, Ramesh is 12th from the left and Kashi is 17th from the right. When Ramesh and Kashi interchange their positions Kashi becomes 27th from the right. How many students are there between Kashi and Ramesh?
(1) 9 (2) 12 (3) 7
(4) 10 (5) None of these
7. In a row of forty students R is fifth from the right end and there are ten students between R and D. What is D's position from the left end of the row?
(1) 26th (2) 23rd (3) 24th
(4) 25th (5) Data inadequate
8. Among A, B, C, D and E each one has scored different marks in an examination. B scored more than C and E and less than A and D. C's marks are not the lowest. Who scored the lowest marks?
(1) D (2) C (3) B
(4) Data inadequate (5) None of these
9. In a queue of thirty boys, M is eighth from the end and J is twelfth from the front. If there are six boys between J and Q, how many boys are there between M and Q?
(1) 10 (2) 12 (3) 8
(4) Data inadequate (5) None of these
10. In a queue of 20 boys, D is fourteenth from the front and F is ninth from the bottom. How many boy are there between D and F?
(1) 2 (2) 3 (3) 4
(4) Data inadequate (5) None of these
11. Mohan is fourteenth from the right end in a row of 40 boys. What is his position from the left end?
(1) 25th (2) 27th (3) 24th
(4) 26th (5) None of these
12. In a group of six children, Q is taller than P but not as tall as L. M is taller than N and O, but not as tall as P. Who is the shortest among them?
(1) N (2) O (3) M
(4) Data inadequate (5) None of these
13. In a group of six children T, K, V, O, M and W, T is fatter than M but not as fat as W. K is not the fattest nor is W whereas V is the thinnest. Who is the fattest among them all?
(1) O (2) T (3) M
(4) Data inadequate (5) None of these

14. Among five students M is heavier than K and T. B is lighter than T and P. K is not the lightest. Who among them is the lightest?
 (1) K (2) B (3) T
 (4) Data inadequate (5) None of these
15. Sam ranked ninth from the top and thirty-eighth from the bottom in a class. How many students are there in the class?
 (1) 45 (2) 46 (3) 47
 (4) 48 (5) None of these
16. A class of boys stands in a single line. One boy is nineteenth in order from both the ends. How many boys are there in the class?
 (1) 27 (2) 37 (3) 38
 (4) 39 (5) None of these
17. Ajay ranked sixteenth from the top and twenty-ninth from the bottom among those who passed an examination. Six boys did not participate in the competition and five failed in it. How many boys were there in the class?
 (1) 40 (2) 44 (3) 50
 (4) 55 (5) 58
18. If Atul finds that he is twelfth from the right and fourth from the left, how many boys should be added to the queue so that there are 28 boys in the line?
 (1) 12 (2) 13 (3) 14
 (4) 20 (5) None of these
19. In a row of boys, Jeevan is seventh from the start and eleventh from the end. In another row of boys, Vikas is tenth from the start and twelfth from the end. How many boys are there in both the rows together?
 (1) 36 (2) 37 (3) 39
 (4) Can't be determined (5) None of these
20. In a class of 60, where girls are twice to that of boys, Kamala, a girl ranked sixteenth from the top. If there are 9 girls ahead of Kamala, how many boys are after her in the rank?
 (1) 13 (2) 7 (3) 14
 (4) 23 (5) None of these
21. Ravi is 7 ranks ahead of Sumit in a class of 39 students. If Sumit's rank is seventeenth from the last, what is Ravi's rank from the start?
 (1) 14th (2) 15th (3) 16th
 (4) 17th (5) None of these
22. Bharati is 8 ranks ahead of Divya who ranks twenty-sixth in a class of 42. What is Bharati's rank from the last?
 (1) 9th (2) 24th (3) 25th
 (4) 34th (5) None of these
23. In a row of boys, A is thirteenth from the left and D is seventeenth from the right. If in this row A is eleventh from the right then what is the position of D from the left?
 (1) 6th (2) 7th (3) 10th
 (4) 12th (5) None of these
24. Rajan is sixth from the left end and Vinay is tenth from the right end in a row of boys. If there are eight boys between Rajan and Vinay, how many boys are there in the row?
 (1) 23 (2) 24 (3) 25
 (4) 26 (5) None of these
25. In a row of boys, A is fifteenth from the left and B is fourth from the right. There are three boys between A and B. C is just left of A. What is C's position from the right?
 (1) 9th (2) 10th (3) 12th
 (4) 13th (5) None of these
26. Rohit is seventeenth from the left end of a row of 29 boys and Karan is seventeenth from the right end in the same row. How many boys are there between them in the row?
 (1) 3 (2) 5 (3) 6
 (4) Data inadequate (5) None of these
27. In a row of forty children, P is thirteenth from the left end and Q is ninth from the right end. How many children are there between P and R, if R is fourth to the left of Q?
 (1) 12 (2) 13 (3) 14
 (4) 15 (5) None of these
28. In a class of 35 students, Kunal is placed seventh from the bottom whereas Sonali is placed ninth from the top. Pulkit is placed exactly in between the two. What is Kunal's position from Pulkit?
 (1) 9 (2) 10 (3) 11
 (4) 13 (5) None of these

29. Richard is fifteenth from the front in a column of boys. There were thrice as many behind him as there were in front. How many boys are there between Richard and the seventh boy from the end of the column?
 (1) 33 (2) 34 (3) 35
 (4) Data inadequate (5) None of these
30. Forty boys are standing in a row facing the North. Amit is eleventh from the left and Deepak is thirty-first from the right end of the row. How far will Shreya who is third to the right of Amit in the row, be from Deepak?
 (1) 2nd (2) 3rd (3) 4th
 (4) 5th (5) None of these
31. In a class, among the passed students, Amisha is twenty-second from the top and Sajal who is 5 ranks below Amisha, is thirty-fourth from the bottom. All the students from the class have appeared for the exam. If the ratio of the students who passed in the exam to those who failed is 4:1 in that class, how many students are there in the class?
 (1) 60 (2) 75 (3) 90
 (4) Data inadequate (5) None of these
32. In a queue, A is eighteenth from the front while B is sixteenth from the back. If C is 25th from the front and is exactly in the middle of A and B, then how many persons are there in the queue?
 (1) 45 (2) 46 (3) 47
 (4) 48 (5) None of these
33. N ranks fifth in a class. S is eighth from the last. If T is sixth after N and just in the middle of N and S, then how many students are there in the class?
 (1) 23 (2) 24 (3) 25
 (4) 26 (5) None of these
34. In a row of girls, there are 16 girls between Priya and Natasha. Priya is thirty-second from the left end of the row. If Priya is nearer than Natasha from the right end of the row, then how far away is Natasha from the left end of the row?
 (1) Data inadequate
 (2) 14th (3) 15th (4) 16th
 (5) None of these
35. In a queue, Shikhar is ninth from the back. Arun's place is eighth from the front. Nikhil is standing between the two. What could be the minimum number of boys standing in the queue?
 (1) 8 (2) 10 (3) 12
 (4) 14 (5) None of these
36. In a row of 21 girls, when Monika was shifted by 4 places towards the right, she became 12th from the left end. What was her earlier position from the right end of the row?
 (1) 9th (2) 10th (3) 11th
 (4) 12th (5) 14th
37. In a row of girls facing North, Reena is 10th to the left of Pallavi who is 21st from the right end. If Malini who is 17th from the left end, is fourth to the right of Reena, how many girls are there in the row?
 (1) 37 (2) 43 (3) 44
 (4) Data inadequate (5) None of these
38. George is fifth from the left and Peter is twelfth from the right end in a row of children. If Peter shifts by three places towards George, he becomes tenth from the left end. How many children are there in the row?
 (1) 21 (2) 22 (3) 23
 (4) 24 (5) 25
39. In a row of boys, if A who is tenth from the left and B who is ninth from the right interchange their positions, A becomes fifteenth from the left. How many boys are there in the row?
 (1) 23 (2) 27 (3) 28
 (4) 31 (5) None of these
40. Students line up in a queue in which Ashish stands fifteenth from the left and Sachin is seventh from the right. If they interchange their places, Sachin would be fifteenth from the right. How many students are there in the queue?
 (1) 21 (2) 22 (3) 29
 (4) None of these (5) All of the above
41. In a row of children, Deepti is ninth from the left and Kashish is thirteenth from the right. They exchange their positions and then Deepti becomes seventeenth from the left. Find the new position of Kashish from the right end of the row.
 (1) 20 (2) 21 (3) 27
 (4) 31 (5) None of these

42. In a row of girls, Rita and Monika occupy the ninth place from the right end and tenth place from the left end, respectively. If they interchange their places, then Rita and Monika occupy seventeenth place from the right and eighteenth place from the left respectively. How many girls are there in the row?
 (1) 25 (2) 26 (3) 27
 (4) Data inadequate (5) None of these
43. In a row of 40 boys Satish was shifted 10 places to the right of Rohan and Kewal was shifted 10 places to the left of Vilas. If Vilas was twenty-sixth from the left and there were three boys between Kewal and Satish after shifting, what was the position of Rohan in the row?
 (1) 10th from the right end
 (2) 10th from the left end
 (3) 39th from the right end
 (4) Data inadequate
 (5) None of these
44. In a row of children, Harish is eleventh from the left and Mangesh is seventeenth from the right. When they interchange their places, Harish will be thirteenth from the left. Which of the following will be the new position of Mangesh from the right?
 (1) Eleventh (2) Twenty-first
 (3) Nineteenth (4) Twenty-ninth
 (5) None of these
45. In a row of girls, Kamala is tenth from the left and Vimla is twelfth from the right. When they exchange their places, Kamala is sixteenth from the left. What is the new position of Vimla from the right?
 (1) 18th (2) 22nd (3) 26th
 (4) 28th (5) None of these
46. Nisha is taller than Suja. Nina is taller than Nisha. Nila is taller than Nina. Misha is the tallest of all. If they stand according to their height, who will be in the middle?
 (1) Nisha (2) Nina (3) Suja
 (4) Nila (5) None of these
47. Originally, Neena's position from the left is
 (1) 5 (2) 13 (3) 14
 (4) 16 (5) None of these
48. Reena's position from the right is
 (1) 6 (2) 13 (3) 14
 (4) 18 (5) None of these
49. If Neena and Reena also exchange their positions between themselves, then after the exchange, Neena's position from the left will be
 (1) 6 (2) 10 (3) 12
 (4) None of these (5) All the above
50. After exchange of positions between Beena and Meena, Meena's positions from the right is
 (1) 5 (2) 10 (3) 12
 (4) None of these (5) All the above

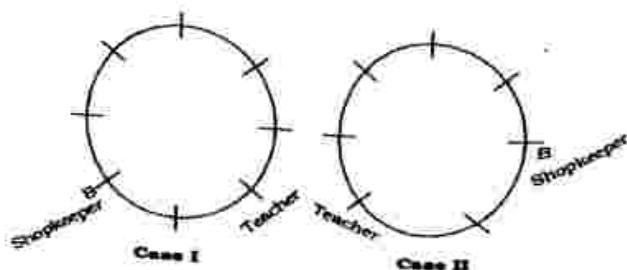
Answer with Explanations:

1. 4; Number of students behind Nitin in rank = $(49 - 18) = 31$.
 So, Nitin is 32nd from the last.
2. 3; Number of students behind Manoj in rank = $(31 - 7) = 24$.
 So, Manoj is 25th from the bottom.
 Similarly, number of students behind Sachin in rank = $(31 - 11) = 20$.
 So, Sachin is 21st from the bottom.
3. 5; Total number children in the row = $12 + 18 - 1 = 29$
 Thus, there are $29 - 13 = 16$ children to the right of Mohan.
4. 2; Total number of boys in the row = $13 + 11 - 1 = 23$
 Position of D from the left = $23 - 17 + 1 = 7^{\text{th}}$
5. 2; Mohan's position from the right end = 12th
 Pratap's position from the right end = 15th
 Number of boys between Pratap and Mohan = $15 - 12 - 1 = 2$
6. 1; From right end
 (i) Kashi's present position : 27th
 (ii) Kashi's former position : 17th
 Now, total number of students between

Directions (47 - 50): Read the following information to answer these questions.

Consider a group comprising of 4 students — Reena, Beena, Meena and Neena, who stand in a row. Reena and Beena stand in sixth and

- Ramesh and Kashi = $27 - 17 - 1 = 9$
7. 4; Here, D's position from the right end
 $= 5 + 10 + 1 = 16^{\text{th}}$
 Now, D's position from the left end
 $= \text{Total number of person} + 1 - \text{position from the right end} = 40 + 1 - 16 = 25^{\text{th}}$
8. 5; Here, A and D > B > C and E
 Now, according to the question, C's marks are not the lowest. Hence E scored the lowest marks.
9. 4; Here, we have no clear information regarding the positions of J, M and Q. Therefore, we can't answer the given question.
10. 5; Here, position of D from the front : 14^{th} and position of F from the front
 $= 20 + 1 - 9 = 12^{\text{th}}$
 Thus, the number of person between F and D is only one.
11. 2; Mohan's position from the left end
 $= 40 + 1 - 14 = 27^{\text{th}}$
12. 4; On the basis of given clues, we get
 $L > Q > P > M > N \geq \text{or} \leq O$.
 There is no information about N and O. So, data are inadequate.
 Again, since we do not get the exact answer therefore opt 'Data inadequate' as your answer.
13. 1; $W > T > M$ and V is the thinnest.
 Thus, $W > T > M > V$
 K or W is not the fattest. Therefore, O is the fattest.
14. 2; According to the given information, we get
 $M > K$
 $M > T > B$
 $P > B$
 Now, it is obvious that B is the lightest.
15. 2; Clearly, number of students in the class
 $= (9 + 3 + 1) = 13$.
16. 2; Clearly, number of boys in the class
 $= (18 + 1 + 18) = 37$.
17. 4; Number of boys who passed
 $= (15 + 1 + 28) = 44$.
 Total, number of boys in the class
 $= (44 + 6 + 5) = 55$.
18. 2; Clearly, number of boys in the line
 $= (11 + 1 + 3) = 15$.
 Number of boys to be added
 $= (28 - 15) = 13$.
19. 5; Clearly, total number of boys in both the rows
 $= (\text{Number of boys in Jeevan's row}) + (\text{Number of boys in Vikas' row})$
 $= (6 + 1 + 10) + (9 + 1 + 11)$
 $= (17 + 21) = 38$.
20. 3; Let the number of boys be x. Then, number of girls = $2x$.
 $x + 2x = 60$
 or, $3x = 60$;
 $x = 20$.
 Therefore, the number of boys = 20 and number of girls = 40.
 Number of students behind Kamla in rank = $(60 - 16) = 44$.
 No. of girls ahead of Kamla in rank = 9.
 No. of girls behind Kamla in rank
 $= (40 - 1 - 9) = 30$.
 Number of boys behind Kamla in rank
 $= 44 - 30 = 14$.
21. 3; Sumit is 17^{th} from the last and Ravi is 7 ranks ahead of Sumit. So, Ravi is 24^{th} from the last.
 Number of students ahead of Ravi in rank = $(39 - 24) = 15$.
 So, Ravi is 16^{th} from the start.
22. 3; Divya ranks 26^{th} and Bharati is 8 ranks ahead of Divya. So, Bharati ranks 18^{th} .
 Number of students behind Bharati in rank = $(42 - 18) = 24$.
 So, Bharati ranks 25^{th} from the last.
23. 2; Clearly, A is 13^{th} from the left and 11^{th} from the right end of the row.
 So, number of boys in the row
 $= (12 + 1 + 10) = 23$.
 Now, D is 17^{th} from the right.
 Number of boys to the left of D = $(23 - 17) = 6$.
 Hence, D is 7^{th} from the left end of the row.
24. 2; Clearly, number of boys in the row
 $= (6 + 10 + 8) = 24$.
25. 1;



- Number of boys in the row
 $= (15 + 4 + 3) = 22$.
 C is just left of A. So, C is 14th from the left end.
 Number of boys to the right of C
 $= (22 - 14) = 8$.
 So, C is 9th from the right end of the row.
26. 1; Karan is 17th from the right end.
 Number of boys to the left of Karan
 $= (29 - 17) = 12$.
 So, Karan is 13th from the left end. Also, Rohit is 17th from the left end.
 Clearly, there are 3 boys between Rohit and Karan.
27. 3; Q is 9th from the right end and R is fourth to the left of Q. So, R is 13th from the right end.
 Number of children to the left of R
 $= (40 - 13) = 27$.
 Thus, R is 28th from the left end. Also, P is 13th from the left end.
 Clearly, there are 14 persons between P and R.
28. 2; Number of students between Kunal and Sonali $= 35 - (7 + 9) = 19$.
 Clearly, there are 9 students between Kunal and Pulkit, as well as Pulkit and Sonali. So, Kunal is 10th from Pulkit.
29. 3; Number of boys in front of Richard = 14.
 Number of boys behind Richard
 $= (14 \times 3) = 42$.
 Total number of boys in the column
 $= (14 + 1 + 42) = 57$.
 In a column of 57 boys, the seventh boy from the end is clearly 51st from the start.
 Thus, we have to find the number of boys between the 15th and the 51st boy, which is clearly 35.
30. 3; Number of boys to the left of Deepak
 $= (40 - 31) = 9$.
 So, Deepak is 10th from the left end.
 Shreya is third to the right of Amit. So, Shreya is 14th from the left end. Clearly, Shreya is fourth to the right of Deepak.
31. 2; Amisha is 22nd from the top and Sajal is 5 ranks below Amisha. So, Sajal is 27th from the top. Also, Sajal is 34th from the bottom.
 Number of students passed
 $= (26 + 1 + 33) = 60$.
- Let the number of students passed and the number failed be $4x$ and x respectively.
 Then, $4x = 60$ and $x = 15$.
 Hence, number of students in the class
 $= (60 + 15) = 75$.
32. 3; The position of B from the front
 $= 25 \times 2 - 18 = 32^{nd}$.
 Also, the position of B from the back = 16th.
 Thus, the total number of persons in the queue
 $= 32 + 16 - 1 = 47$.
33. 2; Here, the position of S from the top
 $= 11 \times 2 - 5 = 17^{th}$.
 Whereas, the position of S from the last = 8th (given).
 Thus, the total number of students in the class
 $= 17 + 8 - 1 = 24$.
34. 3; There are two possible arrangements:
 But since Priya is nearer than Natasha from the right end of the row, so only one arrangement follows.
 Number of girls to the left of Natasha in
 $= [31 - (1 + 16)] = 14$.
 Clearly, Natasha is 15th from the left end of the row.
35. 4; Minimum number of students will be possible in the following case.
- | Shikhar | Nikhil | Arun |
|---------|--------|------|
| ← | | → |
| 9 | | 8 |
| → | | ← |
| 6 | | 7 |
- Thus, in the above case, total number of students $= 9 + 6 - 1 = 14$.
36. 5; Monika's earlier position from the left end
 $= 12 - 4 = 8^{th}$.
 Monika's earlier position from the right end
 $= 21 + 1 - 8 = 14^{th}$.
37. 2; Here, Reena's position from the right end
 $= 21 + 10 = 31^{st}$.
 Malini's position from the right end
 $= 31 - 4 = 27^{th}$.
 Malini's position from the left end
 $= 17^{th}$ (given).
 Thus, the total number of person in the row
 $= 27 + 17 - 1 = 43$.

38. 4; Clearly, George's position lies towards the left end while Peter's position lies towards the right end of the row. So, when Peter shifts towards George, he shifts 3 places to the left. Thus, Peter is now 15th from the right end. But, Peter is 10th from the left end.
Number of children in the row
= $(14 + 1 + 9) = 24$.
39. 1; Clearly, A's new position is 15th from the left. But this is the same as B's earlier position which is 9th from the right.
Number of children in the row
= $(10 + 4 + 9) = 23$
40. 3; Sachin's new position is 15th from the right as well as the left end of the row.
Number of students in the queue
= $(14 + 1 + 14) = 29$.
41. 2; Deepthi's new position is 17th from the left and 13th from the right.
So, number of children in the row
= $(16 + 1 + 12) = 29$.
Now, Kashish's new position is Deepthi's earlier position which is 9th from the left.
Number of children to the right of Kashish = $(29 - 9) = 20$.
Hence, Kashish's new position is 21st from the right.
42. 2; Since Rita and Monika interchange places, Rita's new position is the same as Monika's earlier position. This position is 17th from the right and 10th from the left.
Number of girls in the row
= $(16 + 1 + 9) = 26$.
43. 4; Vilas is 26th from left and Kewal is 10 places to the left of Vilas. So, Kewal is 16th from left. Now, there are three boys between Kewal and Satish. So, Satish may be 20th or 24th from left.
Since the exact position of Satish cannot be ascertained, so the given data are inadequate.
44. 3; Mangesh's earlier position from the right end = 17th
Mangesh's earlier position from the left end = 13th
Total number of persons in the row
= $17 + 13 - 1 = 29$
Mangesh's new position from the right
= $29 + 1 - 11 = 19$
45. 1; The new position of Vimla from the right end = $12 + 16 - 10 = 18$
46. 2; On the basis of the given information, we get,
Misha > Nila > Nina > Nisha > Suja
Obviously, Nina will occupy the middle position.
47. 3; Clearly, Beena's new position is 15th from the left and 4th from the right.
So, number of students in the row
= $(14 + 1 + 3) = 18$.
Neena's original position is 5th from the right.
Number of students to the left of Neena
= $(18 - 5) = 13$.
Hence, Neena's original position is 14th from the left.
48. 2; Reena is 6th from the left.
Number of students to the right of Reena
= $(18 - 6) = 12$.
So, Reena's position is 13th from the right.
49. 1; Neena's new position is Reena's earlier position which is 6th from the left.
50. 3; Meena's new position is Beena's earlier position which is 7th from the left.
Number of students to the right of Meena
= $(18 - 7) = 11$.
So, Meena's position is 12th from the right.

PUZZLE-I

Directions (1 - 5): Study the following information to answer the given questions:

- Six plays are to be organized from Monday to Sunday - One play each day with one day when there is no play. 'No play' day is not Monday or Sunday.
 - The plays are held in sets of 3 plays each in such a way that plays are held without any break i.e. 3 plays are held in such a way, that there is no 'No play' day between them but immediately before this set or immediately after this set it is 'No play' day.
 - Play Z is held on 26th and play X was held on 31st of the same month.
 - Play B was not held immediately after play A (but was held after A, not necessarily immediately) and play M was held immediately before Q.
 - All the six plays were held in the same month.
- Which play was organized on Monday?
(1) Z (2) M (3) Q
(4) Can't be determined (5) None of these
 - Which day was play Z organized?
(1) Tuesday (2) Monday
(3) Wednesday (4) Can't be determined
(5) None of these
 - Which date was 'No play' day?
(1) 26th (2) 28th (3) 29th
(4) Can't be determined (5) None of these
 - Which of the following is **true**?
(1) Play M was organized on Thursday
(2) Play Q was organized in the Middle of the week
(3) There was a gap after 2 plays and then 4 plays were organized
(4) First play was organized on the 25th
(5) Play B was held on Friday
 - Which day was play Q organized?
(1) Friday (2) Wednesday
(3) Saturday (4) Can't be determined
(5) None of these

Directions (6 - 10): Study the following information to answer the given questions.

- In a family of 6 persons, there are two couples.
 - The Lawyer is the head of the family and has only two sons - Mukesh and Rakesh - both are Teachers.
 - Mrs. Reena and her mother-in-law both are Lawyers.
 - Mukesh's wife is a Doctor and they have a son, Ajay.
- Which of the following is definitely a couple?
(1) Lawyer - Teacher
(2) Doctor - Lawyer
(3) Teacher - Teacher
(4) Cannot be determined
(5) None of these
 - What is the profession of Rakesh's wife?
(1) Teacher (2) Doctor (3) Lawyer
(4) Can't be determined (5) None of these
 - How many male members are there in the family?
(1) Two (2) Three (3) Four
(4) Can't be determined (5) None of these
 - What is/was Ajay's Grandfather's occupation?
(1) Teacher (2) Lawyer (3) Doctor
(4) Can't be determined (5) None of these
 - What is the profession of Ajay?
(1) Teacher (2) Lawyer (3) Doctor
(4) Can't be determined (5) None of these

Directions (11 - 15): Study the following information to answer the given questions:

In a Group of 5, each person has an exclusive and different preference for a pen, a watch and a car. Pen preferences are Parker, Lamy, Pointer, Lexi and Cello. Watch preferences are Titan, Fastrack, Samay, Citizen and Timex. Car preferences are Wagon R, Swift, Santro, Mica and City but not in the same order. Suman has Mica and Parker but does not prefer among watches-Titan or Fastrack.

The one who has Swift, likes Fastrack. Mrudula has preference for City, Cello and Citizen. Amit has Preference for Lamy and Timex. Veena prefers Wagon R and Lexi. Harsh's preference for a watch is not Titan.

11. Which watch is Suman's preference?
(1) Titan (2) Fastrack (3) Samay
(4) Can't be determined (5) None of these
12. Which pen is Harsh's preference?
(1) Lamy (2) Pointer (3) Lexi
(4) Can't be determined (5) None of these
13. Which watch is Harsh's preference?
(1) Samay (2) Fastrack (3) Timex
(4) Can't be determined (5) None of these
14. Who's preference is Swift?
(1) Harsh (2) Amit (3) Veena
(4) Can't be determined (5) None of these
15. Which watch is Veena's preference?
(1) Samay (2) Fastrack (3) Timex
(4) Can't be determined (5) None of these

Directions (16 - 20): Study the following information carefully and answer the questions which follow:

There are five men, Anuj, Kunal, Sourav, Rahul and Harish. The one who is the tallest is not the youngest. Kunal is older than only Harish. Sourav is older than Rahul but shorter than him. Only one person is taller than Rahul. Anuj is the shortest while younger than only Sourav and Rahul. Only two men are shorter than Sourav.

16. Who among the following is taller than Anuj only?
(1) Sourav (2) Harish (3) Rahul
(4) Kunal (5) Kunal or Harish
17. If the five men are made to stand in a line according to their height, first in ascending order, then in descending order, then whose position will remain the same in both the arrangements?
(1) Harish (2) Rahul (3) Kunal
(4) Sourav (5) Rahul and Anuj
18. Which of the following men is the third tallest of the five?
(1) Sourav (2) Rahul (3) Harish
(4) Kunal (5) Kunal or Rahul

19. Who among the following men is the tallest?
(1) Sourav (2) Rahul (3) Kunal
(4) Harish (5) Sourav or Harish
20. Who among the following is older than Kunal but younger than Rahul?
(1) Harish (2) Sourav (3) Anuj
(4) Data inadequate
(5) Sourav or Anuj

Directions (21 - 25): Study the following information to answer the given questions:

Eight members A, B, C, D, E, F, G and H belonging to three families X, Y, Z go for weekend outing in three different cars I, II, III. Four out of eight members are females. Members of each family travel in different cars. Each car has at least one male and one female member. Each family has at least two members.

A belongs to family Y and he travels in car III. D is wife of E and they travel in cars I & II respectively. H is son of B who is wife of G and they belong to family Z. C is daughter of F who is wife of A. C travels in car II. G does not travel with F.

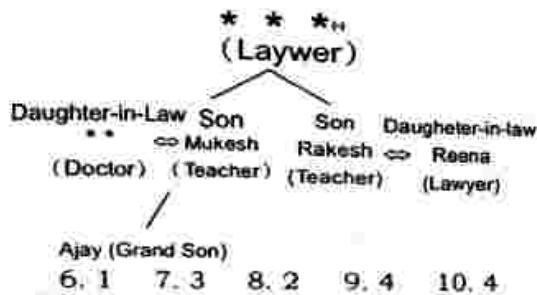
21. Which of the following group of persons travel in car I?
(1) D, F, G (2) D, E, G (3) D, G, H
(4) D, F, H (5) None of these
22. Which car has only two members travelling in it?
(1) I (2) II (3) III
(4) II or III (5) Cannot be determined
23. Which of the following members of families Y & Z travel in different cars?
(1) F, G (2) C, G (3) F, H
(4) C, F (5) None of these
24. Which of the following group of persons is a group of all females?
(1) B, D, G (2) A, B, C (3) B, E, F
(4) D, E, F (5) None of these
25. Which of the following members of families X & Y travel in the same car?
(1) C, F (2) D, F (3) C, D
(4) D, F, E (5) None of these

Answers With Explanations:

1 - 5:

Day	Date	Game
Monday	25	A
Tuesday	26	Z
Wednesday	27	B
Thursday	28	No game
Friday	29	M
Saturday	30	Q
Sunday	31	X

6 - 10: 1. 5; A 2. 1 3. 2 4. 4 5. 3



11 - 15:

Person	Pen	Watch	Car
Suman	Parker	Samay	Mica
Harsh	Pointer	Fastrack	Swift
Mridula	Cello	Citizen	City
Amit	Laxy	Timex	Santro
Veena	Lexi	Titan	Vagon R

11. 3 12. 2 13. 2 14. 1 15. 5 Titan

16 - 20:

The position of people in descending order as per their height and age &

Sl.	Height	Age
1.	Kunal	Saurav
2.	Rahul	Rahul
3.	Saurav	Anuj
4.	Harish	Kunal
5.	Anuj	Harish

21-25:

16. 2 17. 2 18. 1 19. 3 20. 3

Car	Person (Family)		
I	D ₍₁₎ (X)	F ₍₁₎ (Y)	H ₍₁₎ (Z)
II	E ₍₁₎ (X)	C ₍₁₎ (Y)	G ₍₁₎ (Z)
III		A ₍₁₎ (Y)	B ₍₁₎ (Z)

Family	Member
1 X	D and E
2 Y	A, C and F
3 Z	B, G and H

: D₍₁₎ ∞ E₍₁₎

: E₍₁₎ ∞ A₍₁₎

: A₍₁₎ ∞ C₍₁₎

: C₍₁₎ ∞ F₍₁₎

: F₍₁₎ ∞ H₍₁₎

: H₍₁₎ ∞ G₍₁₎

: G₍₁₎ ∞ B₍₁₎

21. 4 22. 3 23. 1 24. 5 25. 2

Directions (1 - 5): Study the following information carefully and answer the questions

Seven friends M, V, K, D, T, J and R study in Class III, IV, V, VI, VII, VIII and IX respectively. Each has a favourite colour viz Yellow, Sky-blue, Red, White, Black, Green and Violet J likes Red colour and studies in class V. R likes Violet colour and studies in class III. M studies in class VIII and he likes neither Green nor Yellow colour. K likes White colour and he studies neither in class VII nor in class IV. D studies in class VI and likes Black colour T doesn't study in class IV. V doesn't like Green colour.

- Which colour does M like?
(1) Red (2) Yellow (3) Green
(4) Sky-blue (5) None of these
- Which colour does V like?
(1) Green (2) Red (3) Yellow
(4) Data inadequate (5) None of these
- In which class does V study?
(1) Class IV (2) Class IX (3) Class VII
(4) Data inadequate (5) None of these
- In which class does K study?
(1) Class III (2) Class V (3) Class IV
(4) Class VII (5) None of these
- In which class does T study?
(1) Class IV (2) Class VII (3) Class VIII
(4) Class IX (5) None of these

Directions (6 - 10): Study the following information carefully and answer the

Three out of M, B, T, W, D and H work in factory X and remaining three work in factory Y. Each of them has his own earning which is different from any one else. T works in factory Y and earns the least. W and D do not work in factory Y and neither of them earns the maximum amount. B earns less than H and W. T doesn't work in the same factory in which M works. M earns more than D but less than B.

- Who earns the maximum amount?
(1) H (2) W (3) B
(4) Data inadequate (5) None of these
- In which factory does B work?
(1) X (2) Y (3) X and Y
(4) Data inadequate (5) None of these
- Which group works in factory X?
(1) TBH (2) WDH (3) WDM
(4) TBM (5) None of these
- Who earns less than M?
(1) Only D (2) Only T
(3) Only B (4) Only D and T
(5) None of these
- W earns more than which of the following groups?
(1) BMDT (2) BMD (3) BDT
(4) Data inadequate (5) None of these

Directions (11 - 15): Study the following information carefully and answer the questions

P, Q, R, S, T and V are six students studying in a class. Each one of them has different height and weight. The one who is the tallest is not the heaviest. T is taller than only P and lighter than R. Q is taller than S and P and is heavier than only T and V. P is lighter than S only. T is heavier than V. S is taller than V whereas Q is not the tallest?

- How many are taller than T?
(1) One (2) Two (3) Three
(4) Five (5) None of these
- How many are shorter than Q?
(1) Two (2) Four (3) Three
(4) Five (5) None of these
- Who is the tallest?
(1) V (2) P (3) T
(4) R (5) None of these

14. If they are arranged in descending order with respect to their heights who will be the third from the beginning?

(1) Q (2) V (3) S
(4) Data inadequate (5) None of these

15. Who is the lightest of them?

(1) V (2) T (3) P
(4) R (5) None of these

information carefully and answer the

B, M, T, R, K, H and D are travelling by a train in a III tier sleeper berth. Each of them is of different profession viz. Engineer, Doctor, Architect, Pharmacist, Lawyer, Journalist and Pathologist. They have occupied two lower berths, three middle berths and two upper berths. B, an engineer is not on the upper berth. The architect is the only second person who has taken similar berth as B. M and H are not on the middle berth and by profession they are pathologist and lawyer respectively. T is a pharmacist. D is neither a journalist nor an architect. The berth of K is same as that of doctor.

16. What is the profession of D?
(1) Doctor (2) Engineer (3) Lawyer
(4) Pharmacist (5) Data is insufficient
17. Which of the following group is in the middle berth?
(1) DKR (2) DHT (3) HKT
(4) DKT (5) None of these
18. Which of the given person-berth-profession arrangement is correct?
(1) R - lower - journalist
(2) R - lower - architect
(3) D - upper - Doctor
(4) K - upper - lawyer
(5) None of these
19. Which of the following is at the lower berth?
(1) BD (2) BK (3) BT
(4) Data insufficient (5) None of these

Directions (20 - 24): Study the following information carefully and answer the questions

M, T, J, R, D, W and Q are seven friends travelling by three cars A, B, and C. There are at least two friends in each car. Out of the seven friends, there are three women. Each is in the different cars. T travels with only his best friend Q who is a woman in car B. M travels by car A. D and W do not travel by car C. J is not a woman whereas W is a woman.

20. By which car J travels?
(1) A (2) B (3) C
(4) Data inadequate (5) None of these
21. By which car three friends travel?
(1) B (2) A (3) C
(4) Data inadequate (5) None of these
22. By which car D travels?
(1) B (2) A (3) A or C
(4) Data inadequate (5) None of these
23. Which of the following group indicates women?
(1) WQR (2) DQR (3) DTR
(4) Data inadequate (5) None of these
24. Which of the following car-person pair is wrong?
(1) A-M (2) B-Q (3) C-R
(4) A-D (5) All are true

information carefully and answer the

Seven friends R, M, K, P, L, W and B live in three different Bungalows viz. X, Y and Z. In any Bungalow at least two or maximum three persons reside. Each likes different fruits viz apple, fig, watermelon, orange, grapes, pine-apple and mango. It is not necessarily in this order. There are three girls living in three different Bungalows. W likes orange and lives in Bungalow Y with only P. M lives in Bungalow Z and likes fig. Those who live Bungalow X like neither apple nor grapes. R and L do not live in Bungalow X. K is a fast friend of R and she does not like watermelon. L likes pineapple. No girl likes oranges and one of them likes apple. R does not like grapes.

25. Who likes mangoes?
(1) K (2) B (3) P
(4) Data inadequate (5) None of these

26. Who lives in bungalow Z?
 (1) M, R (2) K, B, M (3) M, R, B
 (4) M, K, R (5) None of these
27. Which fruit does R like?
 (1) Apple (2) Watermelon (3) Mango
 (4) Pineapple (5) None of these
28. Who are three girls in all the friends?
 (1) K, R, W (2) R, K, P (3) K, M, P
 (4) Data inadequate
 (5) None of these
29. Which fruit does B like?
 (1) Mango (2) Grapes (3) Apple
 (4) Watermelon (5) None of these

Answers With Explanations:

1 - 5:

	Person	Colour	Class
1.	J	Red	V
2.	R	Violet	III
3.	M	Sky-blue	VIII
4.	K	White	IX
5.	D	Black	VI
6.	T	Green	VII
7.	V	Yellow	IV

1. 4 2. 3 3. 1 4. 5; IX 5. 2

information carefully and answer the 6 - 10:

Seven friends G, H, I, J, K, L and M play different games viz. badminton, table-tennis, Carrom, Golf, Hockey, Cricket and Football but it is not necessarily in this order only. Each of them likes different colour, viz. pink, orange, green, sky-blue, yellow, red and white but it is not necessarily in this order only.

H plays golf and he likes pink colour but does not play cricket or hockey. The one who likes yellow colour plays table-tennis. L plays football and likes green colour. K does not like orange, sky-blue or yellow colour. The one who plays carrom likes white. G does not play carrom and M does not play cricket or hockey. I likes sky-blue but doesn't play hockey.

30. Which combination of colour, person and game is correct?

- (1) Yellow - I - table-tennis
 (2) Yellow - K - badminton
 (3) White - J - Carrom
 (4) Orange - H - Hockey
 (5) None of these

31. Who plays cricket?

- (1) J (2) I (3) K
 (4) M (5) Can't be determined

32. Who plays badminton?

- (1) M (2) K (3) J
 (4) Can't be determined (5) None of these

Following table shows name of the persons related factory and position of persons in descending order according to their earnings.

Order	Person	Factory
1.	H	Y
2.	W	X
3.	B	Y
4.	M	X
5.	D	X
6.	T	Y

6. 1 7. 2 8. 3 9. 4 10. 1

11 - 15:

In descending order, according to height and weight, order of the students is as follows:

Order	Weight	Height
1.	R	S
2.	Q	P
3.	S	R
4.	V	Q
5.	T	T
6.	P	V

11. 5 Four 12. 2 13. 4 14. 3 15. 1

Final arrangement is as follows:

	Person	Profession	Berth
1.	B	Engineer	Lower
2.	R	Architect	Lower
3.	M	Pathologist	Upper
4.	H	Lawyer	Upper
5.	T	Pharmacist	Middle
6.	K	Journalist	Middle
7.	D	Doctor	Middle

16. 1 17. 4 18. 2 19. 5 B & R

20 - 24:

	Car	Person (Gender)
1.	A	M (Male), D (Male), W (Female)
2.	B	T (Male), Q (Female)
3.	C	J (Male), R (Female)

20. 3 21. 2 22. 2 23. 1 24. 5

Bungalows	Person (Fruits)
X	K ₁ , Mango, B ₁ (Watermelon)
Y	W ₁ (Orange), P ₁ (Grapes)
Z	M ₁ , Fig, R ₁ (Apple), L ₁ (Pineapple)

25. 1

26. 5 ; M, R & L

27. 1 28. 2 29. 4

	Person	Game	Colour
1.	H	Golf	Pink
2.	G or J or M	Table-Tennis	Yellow
3.	L	Football	Green
4.	K	Cricket or Badminton or Hockey	Red
5.	J or M	Carrom	White
6.	I	Cricket or Badminton	Sky blue
7.	G or J or M	Cricket or Badminton or Hockey	Orange

Note: M does not play Cricket or Hockey.

30. 5 31. 5 32. 4

Directions (1 - 5): Study the following information carefully and answer the

M, P, D, K, R, T and W are seven members of a family. There are three female members among them. There are two lawyers, two teachers, two engineers and one doctor among them. None of the female members is engineer. D is one of the lawyers and is husband of P. W is one of the teachers. D and R are the only children of M and K. T has the same profession as that of his uncle R. K is grandmother of T and W. R's father is also a lawyer. K is not a doctor. R is unmarried.

- How is M related to T?
(1) Father (2) Uncle (3) Brother
(4) Data inadequate (5) None of these
- Who is the doctor?
(1) R (2) T (3) P
(4) Data inadequate (5) None of these
- How is W related to R?
(1) Nephew (2) Niece
(3) Nephew or Niece
(4) Data inadequate (5) None of these
- How is P related to M?
(1) Daughter (2) Sister-in-law
(3) Grand-daughter
(4) Daughter-in-law
(5) None of these
- Which of the following pairs of persons are engineers?
(1) RW (2) RW (3) MP
(4) Data inadequate
(5) None of these

Directions (6 - 10): Study the following information carefully and answer the

A, M, P, J, H, D and K are seven students of a school. They study in Std. III, IV and V with atleast two in any one standard.

Each of them has different choice of colour from - Blue, Red, Green, Yellow, Black, White and Brown, not necessarily in the same order. M studies in Standard IV with only D who likes Red colour. A studies in Standard V and does not like either Blue or Green. H does not study in Standard V and likes Yellow colour. P and J study in the same standard but not with A. None of those who study in Standard III likes White. The one who likes Black studies in Standard IV. J likes Brown colour. P does not like Blue colour.

- Which colour does P like?
(1) Green (2) Blue
(3) Blue or Green
(4) Data inadequate
(5) None of these
- Which of the following combinations is definitely correct?
(1) III-H-Black (2) IV-K-Blue
(3) V-A-Blue (4) IV-D-Green
(5) All are incorrect
- Which colour does A like?
(1) Brown (2) Red (3) White
(4) Data inadequate
(5) None of these
- Which colour does K like?
(1) Green (2) Blue
(3) Blue or Green
(4) Data inadequate
(5) None of these
- In which std. do three of them study?
(1) III only (2) V only
(3) III or V only (4) Data inadequate
(5) None of these

Directions (11 - 15): Study the following information carefully and answer the

A, B, C, D, E, F and G are the only seven members of a family. There are three females among them. There are two married couples in the family. Each of them has a different profession- Architect,

Lawyer, Doctor, Teacher, Engineer, Manager and Musician, not necessarily in the same order.

B is the Lawyer and he is married to F, the Manager. A is brother of G who is Architect. C is the Doctor and is an unmarried lady. D is the Teacher and is sister of G. E is not an Engineer.

11. Which of the following combinations is definitely correct?
 - (1) B - Male - Manager
 - (2) B - Female - Lawyer
 - (3) C - Female - Musician
 - (4) E - Male - Musician
 - (5) D - Male - Architect
12. Which of the following combinations represents the husbands of the two married couples?
 - (1) BG (2) AF (3) BE
 - (4) Data inadequate (5) None of these
13. What is E's profession?
 - (1) Doctor (2) Musician
 - (3) Teacher (4) Data inadequate
 - (5) None of these
14. What is A's profession?
 - (1) Engineer
 - (2) Musician
 - (3) Engineer or Musician
 - (4) Data inadequate
 - (5) None of these
15. Which of the following pairs is a married couple?
 - (1) BG (2) FE (3) AC
 - (4) Data inadequate (5) None of these

Directions (16 - 20): Study the following information carefully and answer the

M, J, R, D, W and Q are seven friends travelling in three cars - A, B and C with at least two persons in each car. There are three females among them, one in each car. T travels with only her best friend Q in car B. M travel in car A. D and W do not travel in car C. J is not a female and W is a female.

16. J travels in which car?
 - (1) A (2) C (3) A or C
 - (4) Data inadequate (5) None of these

17. In which car do three of them travel?
 - (1) C (2) B (3) A
 - (4) Data inadequate (5) None of these
18. D travels in which car?
 - (1) B (2) A (3) A or C
 - (4) Data inadequate (5) None of these
19. Which of the following groups represents the three females?
 - (1) WQR (2) DQR (3) DTR
 - (4) Data inadequate (5) None of these
20. Which of the following combinations of car person is not correct?
 - (1) A-M (2) B-Q (3) C-R
 - (4) A-D (5) All are correct

Directions (21 - 25): Study the following information carefully and answer the

Seven friends R, M, K, P, L, W and B live in three different buildings, i.e. X, Y and Z. Not less than two or not more than three live in any of the buildings. Each of them has a liking for different fruits among apple, jackfruit, watermelon, orange, grapes, pineapple and mango, not necessarily in same order. Three among them are girls, one each in every building. W likes orange and stays in building Y alongwith only P. M lives in building Z and likes jackfruit. None in building X likes apple or grapes. R and L don't stay in X building. K is R's close friend and she does not like watermelon. L likes pineapple. None of the girls likes orange and one of them likes apple. R does not like grapes.

21. Who likes mango?
 - (1) B (2) P (3) K
 - (4) Data inadequate (5) None of these
22. Who stay in building Z?
 - (1) M, R (2) K, B, M
 - (3) M, R, B (4) M, K, R
 - (5) None of these
23. Which fruit does R like?
 - (1) Apple (2) Watermelon
 - (3) Mango (4) Pineapple
 - (5) None of these

24. Who are the three girls among the friends?
 (1) K, R, W (2) R, K, P
 (3) K, M, P (4) Data inadequate
 (5) None of these
25. Which fruit does B like?
 (1) Mango (2) Grapes
 (3) Apple (4) Watermelon
 (5) None of these

information carefully and answer the

P, Q, R, S, T and U are six employees of an organization. There are at least two managers, at least two clerks and at least one officer among them. They work in three departments of Computers, Sales and Marketing with at least two employees in each department. In no department there are employees belonging to same cadre.

- (i) T works in Sales and is not a Clerk.
 (ii) Q, a manager, works in Computers.
 (iii) P, the officer, works in Marketing.
 (iv) R, an officer, works with T.
 (v) U does not work with P.
26. What is T's designation?
 (1) Manager (2) Officer
 (3) Manager or Officer
 (4) Data inadequate
 (5) None of these
27. With whom does S work in the same department?
 (1) Q (2) T (3) R
 (4) Data inadequate (5) None of these
28. In which of the following departments there is no Manager?
 (1) Sales (2) Computer
 (3) Sales or Computer (4) Marketing
 (5) None of these
29. In which department does U work?
 (1) Sales (2) Computers
 (3) Marketing (4) Data inadequate
 (5) None of these
30. The two clerks work in which of the following pairs of departments?
 (1) Sales-Computers
 (2) Marketing-Sales

- (3) Marketing-Computers
 (4) Data inadequate
 (5) None of these

information carefully and answer the

- (i) Eight persons A, B, C, D, E, F, G and H work in three different companies X, Y and Z.
 (ii) There are two ladies who work in different companies and their specialisation is also different.
 (iii) Two of them have specialisation in Finance, another two have specialisation in Human Resources, two have specialisation in Marketing, one is engineer and one of them is specialist in Computer.
 (iv) D is a specialist in Human Resource working in Company X while her friend G is a Finance specialist and works in Company Z.
 (v) H is a Human Resource specialist who works with Marketing specialist B but does not work in Company Y.
 (vi) The two persons with same specialisation do not work together.
 (vii) Marketing specialist F works in Company Y and his friend A who is Finance specialist works in Company X with only one other specialist.
 (viii) In no company more than three persons work.
 (ix) C is an engineer and his sister works in Company Z.
 (x) No lady is an engineer or Computer specialist.
31. In which two Companies Human Resource specialists work?
 (1) X and Y (2) Y and Z
 (3) X and Z (4) Data inadequate
 (5) None of these
32. Who is Computer specialist?
 (1) C (2) E (3) H
 (4) Data inadequate (5) None of these
33. The two ladies are
 (1) B and D (2) D and H (3) D and G
 (4) Either (1) or (3)
 (5) Data are inadequate

34. What is the specialisation of H?
 (1) Marketing (2) Finance (3) Computer
 (4) Engineer (5) None of these
35. In which Company does C work?
 (1) Y (2) Z (3) X
 (4) Either Y or Z (5) None of these

Directions (36 - 40): Study the following information carefully and answer the questions given below it:

- (i) There are seven members, four men and three women in a family.
 (ii) They are L, M, N, O, P, Q and R.
 (iii) M is a businessman and father of P.
 (iv) Q is the paternal grandfather of P and is a Doctor.
 (v) N who is the housewife is daughter-in-law of O.
 (vi) R is P's uncle and is an advocate.
 (vii) There is one Architect, one Pilot and one Journalist in the family.
 (viii) N is not P's mother.
 (ix) There are three married couples in the family.
36. If Q is the grandfather of a pilot, what is Q's daughter-in-law's profession?
 (1) Journalist (2) Doctor (3) Advocate
 (4) Cannot be determined
 (5) None of these
37. If O is the Pilot and the Journalist is not a female then P's profession is
 (1) Architect (2) Journalist (3) Doctor
 (4) Cannot be determined
 (5) None of these
38. If the Pilot does not have any child, then who is the Pilot?
 (1) L (2) N (3) P
 (4) Either (1) or (3)
 (5) Either (2) or (3)
39. Which of the following is a group of male members?
 (1) O, R, P, M (2) Q, M, R, P
 (3) L, Q, M, R (4) Either (2) or (3)
 (5) None of these
40. If P's mother is an Architect, which is the set of three couples?
 (1) ML, RM, QO (2) RO, ML, QN
 (3) QO, RN, PL
 (4) Cannot be determined
 (5) None of these

Directions (41 - 45): Study the following information carefully and answer the questions given below:

P, Q, R, S, T, U and V are seven professors. Each one teaches a different subject from Physics, Chemistry, Biology, English, Mathematics, Economics and Geography, not necessarily in the same order. Each of them teaches one day each on the seven days of the week from Monday to Sunday not necessarily in the same order. R teaches Biology on Friday. Q teaches Mathematics on the previous day of the day on which the professor teaches Physics. V teaches on Sunday but does not teach Chemistry or English. S teaches Economics on the previous day on which U teaches. P teaches Geography on Tuesday. T does not teach English.

41. On which day does U teach?
 (1) Wednesday
 (2) Thursday
 (3) Wednesday or Thursday
 (4) Data inadequate
 (5) None of these
42. Which subject does V teach?
 (1) Chemistry (2) English
 (3) Biology (4) Data inadequate
 (5) None of these
43. Which subject does T teach?
 (1) Chemistry
 (2) Physics
 (3) Chemistry or Physics
 (4) Data inadequate
 (5) None of these
44. On which day does V teach?
 (1) Wednesday (2) Thursday
 (3) Monday (4) Data inadequate
 (5) None of these
45. Which subject does U teach?
 (1) Physics (2) English
 (3) Physics or English
 (4) Data inadequate
 (5) None of these

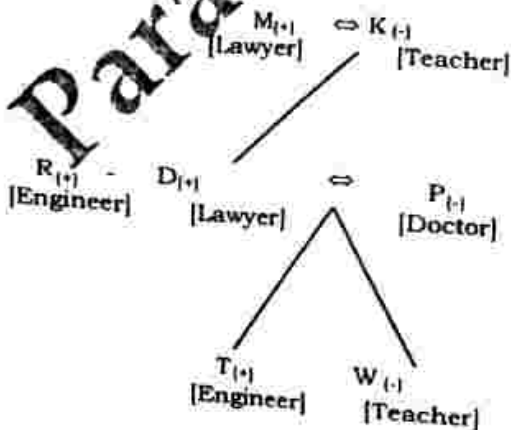
Directions (46 - 50): Study the following information carefully and answer the questions given below:

J, K, L, M, N, O and P are seven kids playing in the garden. They are wearing clothes of colours Black, Blue, White, Green, Pink, Yellow and Brown. Out of the seven, three are girls. No girl is wearing either Black, Yellow or Brown. M's sister O is wearing Pink, while he is wearing Brown. J is wearing Blue while his sister K is not wearing Green. N is wearing Yellow while his best friend P is a boy.

46. What colour is K wearing?
 (1) Green (2) Pink (3) Brown
 (4) Data inadequate (5) None of these
47. What colour is P wearing?
 (1) Black (2) Blue (3) White
 (4) Green (5) None of these
48. What colours are the sisters of J and M wearing?
 (1) Pink and Green
 (2) Pink and Yellow
 (3) White and Green
 (4) White and Pink
 (5) None of these
49. What colour is L wearing?
 (1) Black (2) Green (3) White
 (4) Data inadequate (5) None of these
50. Which is group denoting only girls?
 (1) KLM (2) KNO (3) KLO
 (4) Data inadequate (5) None of these

Answers with Explanation:

1 - 5: From the given clues we get the complete information as follows:



Where,
 (+) = Male, (-) = Female

1. 5; Grandfather
 2. 3 3. 2 4. 4 5. 1

6 - 10: On the basis of the given clues the complete information is as follows:

CLASS PERSON (COLOUR)

1. Std. III P (Green), J (Brown), R (Yellow)
 2. Std. IV M (Black), D (Red)
 3. Std. V A (White), K (Blue)

6. 1 7. 5 8. 3 9. 2 10. 1

11 - 15: On the basis of the given clues the complete information is as follows:

B (+) [Lawyer] $\Leftrightarrow$ F (+) [Manager]

Also,

A (+) [Engineer] - G (+) [Architect] - D (+) [Teacher]

Also, E (+) [Musician] $\Leftrightarrow$ D (+) [Teacher]

And, C (+) [Doctor]

Note that 'C' is Unmarried.

11. 4 12. 3 13. 2 14. 1 15. 5

16 - 20: On the basis of the given clues the complete information is as follows:

CAR	PERSON (GENDER)
1. A	M (+), D (+), W (+)
2. B	T (+), Q (+)
3. C	J (+), R (+)

16. 2 17. 3 18. 2 19. 1 20. 5

21 - 25: On the basis of the given clues the complete information is as follows:

BUILDING PERSON (FRUIT)		
1. X	K (+) [Mango], B (+) [Watermelon]	
2. Y	W (+) [Orange], P (+) [Grapes]	
3. Z	M (+) [Jackfruit], R (+) [Apple], L (+) [Pineapple]	

21. 3 22. 5; M, R and L 23. 1 24. 2 25. 4

26 - 30: On the basis of the given clues the complete information is as follows:

DEPARTMENT	PERSON (PROFESSION)
1. Computers	Q (Manager), U (Clerk)
2. Sales	T (Manager), R (Officer)
3. Marketing	P (Officer), S (Clerk)

26. 1 27. 5 28. 4 29. 2 30. 3

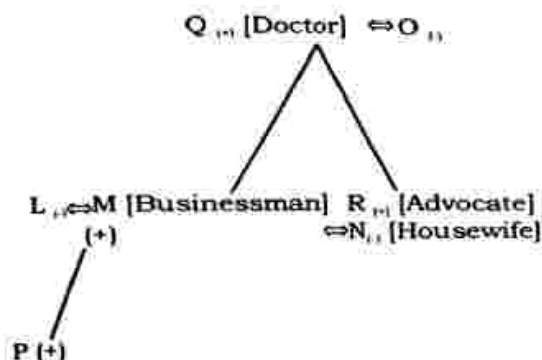
31 - 35: On the basis of the given clues the obtained information is as follows:

COMPANY	PERSON (SPECIALIZATION)
1. X	D ₁₁ [Human Resource], A ₁₁ [Finance]
2. Y	F ₁₁ [Marketing], C ₁₁ [Engineer], E ₁₁ [Computer Expert]
3. Z	G [Finance], H ₁₁ [Human Resource], B [Marketing]

Note that gender of G and B is not known

31. 3 32. 2 33. 4 34. 5; Human Resource
35. 1

36 - 40: On the basis of the given clues, we get the following information.



Note that the professions of O, L and P are not clear.

36.4 37.2 38.3 39.2
40.5; ML, RN and QO

41-45. On the basis of the given clues, the complete information is as follows:

	DAY	PERSON	SUBJECT
1.	MON	T	Chemistry
2.	TUE	P	Geography
3.	WED	S	Economics
4.	THU	U	English
5.	FRI	R	Biology
6.	SAT	Q	Mathematics
7.	SUN	V	Physics

41.2

42.5; Physics

43.1

44.5; Sunday

45.2

46-50. On the basis of the given clues, we get the following information:

	PERSON	GENDER	COLOUR	RELATION
1.		Male	Blue	Brother of K
2.	K	Female	White	Sister of J
3.	L	Female	Green	x x x x x
4.	M	Male	Brown	Brother of O
5.	N	Male	Yellow	x x x x x
6.	O	Female	Pink	Sister of M
7.	P	Male	Black	x x x x x

46.5; White

47.1

48.4 49.2 50.3

Directions (1-7): Study the following information to answer the given questions:

Six chemical L, M, N, O, P and Q are kept in bottles of different colours viz. Green, Red, Blue, White, Pink and Violet, not necessarily in the same order. These bottles are arranged from left to right, again not necessarily in the same order.

Chemical M is kept in White bottle. Chemical L is not kept in Green bottle and is kept to the immediate left of the Violet bottle. Chemical O is kept in the Blue bottle and is kept exactly between the bottles containing chemicals L and M. The Red bottle is at the extreme left end. The bottle containing chemical Q is not kept at either of the ends. The Green bottle is kept at the extreme right end. Chemical P is not kept near the White bottle.

- Four of the following five are alike in a certain way based on their positions in the above arrangement and so form a group. Which is the one that **does not** belong to the group?
(1) LM (2) LP (3) QQ
(4) LQ (5) NO
- Which bottle contains chemical L?
(1) Pink (2) Blue (3) Red
(4) Can't be determined (5) None of these
- Which of the following combinations of chemical and bottle is **correct**?
(1) P-Red (2) N-Green (3) P-Green
(4) Q-Pink (5) None of these
- Which bottle contains chemical Q?
(1) Pink (2) Green (3) Violet
(4) Can't be determined (5) None of these
- If all the six chemicals are arranged alphabetically from left to right, positions of how many will remain unchanged?
(1) None (2) One (3) Two
(4) Three (5) Four
- Which bottle contains chemical N?
(1) Green (2) Red (3) Pink
(4) Can't be determined (5) None of these

7. Which chemical is kept in the bottle at the extreme right end?

- (1) P (2) N (3) L
(4) Can't be determined (5) None of these

Directions (8 - 14): Study the following information to answer the given questions:

Six plays A, B, C, D, E and F are to be staged starting from Monday and ending on Sunday with one of the days being an off day, not necessarily in the same order. Each of the plays has different time

duration: $\frac{1}{2}$ hour, 1 hour, $1\frac{1}{2}$ hours, 2 hours, $2\frac{1}{2}$ hours and 3 hours, again not necessarily in the same order.

Sunday is not an off day and a Play of $\frac{1}{2}$ hour duration is staged on that day. Play A is staged immediately before Play E. There are two plays staged between Play F which is for 3 hours and Play C which is for $1\frac{1}{2}$ hours. The off day is after the staging of Play E and there are two days between the off day and Play A. Play D which is for 2 hours is not staged on Monday. The play staged immediately before the off day is of 3 hours. Play A is for less than $2\frac{1}{2}$ hours.

- What is the time duration of Play B?
(1) $2\frac{1}{2}$ hours (2) 2 hours (3) 1 hour
(4) $\frac{1}{2}$ hour (5) None of these
- Which day is the off day?
(1) Tuesday (2) Monday (3) Friday
(4) Saturday (5) Cannot be determined

10. Which of the following combinations of Play-Day-Time Duration is correct?

(1) E - Wednesday - 2 hours
(2) A - Tuesday - 1 hour
(3) C - Thursday - $1\frac{1}{2}$ hours
(4) F - Tuesday - 3 hours
(5) None is correct

11. On which day is Play D staged?

(1) Wednesday (2) Saturday (3) Tuesday
(4) Friday (5) Can't be determined

12. How many plays are staged before the off day?

(1) Two (2) One (3) Five
(4) Three (5) None of these

Directions (13 - 14): Keeping all the other information the same, if D is staged on Monday, then

13. A play of what time duration would be staged on Thursday?

(1) 2 hours (2) $2\frac{1}{2}$ hours (3) 1 hour
(4) 3 hours (5) Can't be determined

14. Which day would be the off day?

(1) Tuesday (2) Monday (3) Friday
(4) Saturday (5) Can't be determined

Directions (15 - 21): Study the following information to answer the given questions:

6 lectures are scheduled in a week starting from Monday and ending on Sunday of the same week. Computer Science is not on Tuesday or Saturday. Psychology is immediately after Organizational Behaviour. Statistics is not on Friday and there is one day gap between Statistics and Research Methods. One day prior to the schedule of Economics there is no lecture (as that day is the 'off' day and Monday is not the 'off' day).

15. Which of the following is the last lecture scheduled?

(1) Statistics (2) Research Methods
(3) Psychology (4) Can't be determined
(5) None of these

16. If Wednesday is the 'off' day, the code would be 2 - 4, if Thursday was the 'off' day, the code would be 3 - 3. Taking into account the 'off' day which of the following code is correct?

(1) 2 - 4 (2) 3 - 3 (3) 4 - 2
(4) Can't be determined (5) None of these

17. Which lecture is scheduled on Friday?

(1) Economics (2) Psychology
(3) Computer Science
(4) Can't be determined
(5) None of these

18. How many lectures were scheduled between Economics and Psychology?

(1) One (2) Two (3) Three
(4) Can't be determined (5) None of these

19. Which day is Computer Science scheduled?

(1) Monday (2) Wednesday
(3) Thursday (4) Can't be determined
(5) None of these

20. Which day is the 'off' day?

(1) Tuesday (2) Wednesday
(3) Friday (4) Can't be determined
(5) None of these

21. If someone wants to attend only two lectures out of Psychology, Research Methods and Computer Science but wants the two days to be successive (One after the other) then which lecture-combination may be selected?

(1) Research Methods, Computer Science
(2) Psychology, Computer Science
(3) Psychology, Research Methods
(4) Any two of the three is possible
(5) With the condition of successive day it is not possible

Directions (22 - 26): Study the following information carefully and answer the given questions.

Seven conferences on Marketing, Finance, HR, Real Estate, Hospitality, Management, and Banking were scheduled to be held in Mumbai, Pune, Delhi, Hyderabad, Indore, Bhopal and Chennai on one day in a week starting from Monday and

ending on Sunday.

Conference on Hospitality was held in Hyderabad on Friday. Only one conference was held between conference on hospitality and Finance. Conference on Management was held immediately after HR but immediately before Banking. Conference on Management was not held in Indore. The conference held on Monday was held in Delhi. Only one conference was held between conferences on Banking and the conference held in Mumbai. The conference on HR was not held in Mumbai. Conference in Pune was held immediately before the conference in Indore. Conference on Real Estate was not held on Monday. Conference in Chennai was not held after conference in Mumbai.

22. If Delhi is related to Pune and Banking is related to Real Estate in a certain way, then to which of the following would Indore be related to, following the same pattern?
(1) Bhopal (2) Chennai (3) Mumbai
(4) Delhi (5) None of these
23. In which of the following cities was conference on Banking held?
(1) Chennai (2) Mumbai (3) Bhopal
(4) Bhopal (5) Indore
24. How many conferences were held between conferences on Marketing and Real Estate?
(1) None (2) One (3) Two
(4) Three (5) Four
25. On which of the following days was the conference on HR held?
(1) Monday (2) Tuesday
(3) Wednesday (4) Thursday (5) Friday
26. Which of the following conferences was held on Monday?
(1) Banking (2) Management
(3) HR (4) Marketing
(5) Can't be determined

Directions (27 - 31): Study the following information and answer the questions given:

Seven representatives of a company – Samir, Nita, Richa, Shweta, Gifty, Paul and Mohit travelled to three different countries i.e. South Africa, Australia and France.

Each of them travelled on different days of the week (no two persons travelled on the same day), starting on Monday and ending on Sunday. Minimum two people travelled to each country and South Africa is the only country to which three people travelled.

Samir travelled to South Africa on Monday. Paul travelled to Australia but neither on Tuesday nor on Saturday. Mohit travelled on Sunday but not to France. The one who travelled to Australia travelled on Tuesday and the one who travelled to France travelled on Saturday. Gifty travelled on Wednesday. Richa travelled to South Africa but not on Thursday. Nita did not travel to France.

27. If everyone's trip is postponed by one day, who will be travelling on Wednesday?
(1) Paul (2) Richa (3) Nita
(4) Gifty (5) None of these
28. Who amongst the seven representative travelled on Saturday?
(1) Shweta (2) Nita (3) Richa
(4) Can't be determined (5) None of these
29. Which one of the following combinations is true according to the given information?
(1) Paul - Thursday - South Africa
(2) Shweta - Wednesday - France
(3) Mohit - Monday - South Africa
(4) Richa - Friday - Australia
(5) None is true
30. To which country and on which day did Nita travel?
(1) South Africa, Wednesday
(2) Australia, Friday
(3) Australia, Thursday
(4) Australia, Tuesday
(5) None of these
31. Who was the last one to travel?
(1) Samir (2) Richa (3) Mohit
(4) Shweta (5) None of these

Directions (32 - 36): Study the following information carefully and answer the given questions:

One of the seven subjects viz. Maths, Zoology, Botany, Chemistry, Physics, English and Statistics is taught one day each in a week starting from Monday and

ending on Sunday. Chemistry is taught on Thursday. English is taught the day immediately next to the day when Zoology is taught. English is neither taught on Tuesday nor on Saturday. Only one lecture is held between Chemistry and Botany. Two lectures are scheduled between Maths and Zoology. Statistic is neither taught on Monday nor Sunday.

32. On which of the following days is Physics taught?
 (1) Monday (2) Tuesday
 (3) Wednesday (4) Thursday (5) Friday
33. How many subjects are taught between Botany and Zoology?
 (1) None (2) One (3) Two
 (4) Three (5) Four
34. Which of the following subject is taught on Saturday?
 (1) Botany (2) Statistics (3) Zoology
 (4) Maths (5) Physics
35. On which of the following days is Statistics taught?
 (1) Tuesday (2) Wednesday
 (3) Thursday (4) Friday
 (5) Can't be determined
36. If Statistics is related to Zoology and Physics is related to Botany in a certain way, then to which of the following would Chemistry be related to, following the same pattern?
 (1) Maths (2) Statistics (3) Physics
 (4) English (5) Can't be determined

Directions (37 - 39): Study the following information and answer the given questions:

A building has seven floors numbered one to seven in such a way that the ground floor is numbered one, the floor above it, two and so on such that the topmost floor is numbered seven. One out of seven people viz. A, B, C, D, E, F and G lives on each floor. A lives on fourth floor. E lives on the floor immediately below F's floor. F does not live on the second or the seventh floor.

C does not live on an odd numbered floor. B does not live on a floor immediately above or below C's floor. D does not live on the topmost floor. G does not live on any floor below E's floor.

37. Who lives on the topmost floor?
 (1) B (2) C (3) E
 (4) G (5) Can't be determined
38. Who lived immediately above D's floor?
 (1) A (2) B (3) C
 (4) F (5) G
39. Four of the following five are asked in a certain way and so form a group. Which is the one that does not belong to that group?
 (1) F (2) D (3) B
 (4) G (5) C

Directions (40 - 44): Study the following information and answer the questions that follow:

Six friends - Deepak, Varun, Anit, Nilesh, Rajesh and Siddharth are studying six different specializations of engineering which are - metallurgy, telecommunication, software, mechanical, electrical and hardware not necessarily in the same order. Each one likes a different sport - hockey, cricket, swimming, football, badminton and tennis, again not in the same order.

Nilesh is not studying hardware. Rajesh is studying software and likes hockey. Anit likes swimming and is not studying hardware. The one who likes football is studying electrical. Siddharth is studying mechanical and does not like tennis. The one who likes badminton is studying telecommunication. Deepak and Varun do not like badminton. Deepak does not like tennis.

40. Which specialisation is Varun studying?
 (1) Metallurgy (2) Mechanical
 (3) Hardware (4) Electrical
 (5) None of these
41. Which sport does Deepak like?
 (1) Football (2) Cricket (3) Hockey
 (4) Can't be determined (5) None of these
42. Which of the following person - specialisation combination is correct according to the given information?
 (1) Nilesh - Hardware
 (2) Varun - Electrical
 (3) Anit - metallurgy
 (4) Siddharth - Software
 (5) None is correct

Directions (43 - 44): If all six friends are asked

sit in a straight line facing North, in an alphabetical order (according to their names), from left to right, then-

43. Who will immediate left to the one studying electrical?
- (1) The one who likes badminton
 - (2) The one who is studying telecommuni-cation
 - (3) The one who is studying hardware
 - (4) The one who likes hockey
 - (5) None of these
44. Which of the following combinations will represent the favourite sport of the immediate neighbours of Rajesh?
- (1) Badminton - Football
 - (2) Cricket - Tennis
 - (3) Cricket - Football
 - (4) Tennis - Football
 - (5) Badminton - Cricket

Directions (45 - 47): Study the following information to answer the given questions:

Six friends A, B, C, D, E and F working in the same office take different time to reach office. All of them take time in the multiples of ten in such a manner that the one who reaches office the earliest, reaches in 10 minutes and the one who takes maximum time reaches office in 60 minutes. D takes more time than E but less time than A. A reaches in 30 minutes. B takes less time than only F.

45. How much time does C take to reach office?
- (1) 60 minutes (2) 50 minutes
 - (3) 40 minutes (4) 20 minutes
 - (5) Can't be determined
46. Who amongst the following takes maximum time to reach office?
- (1) B (2) C (3) D
 - (4) F (5) Can't be determined
47. How many people take more time to reach office than D?
- (1) Four (2) Three (3) Two
 - (4) One (5) None

Directions (48 - 52): Study the following information to answer the given questions:

Twelve friends A, B, C, D, E, F, G, H, I, J, K

and L were born on different months of a year. A was born in April and G was born in August. J was born in the month next to that of K but immediately before to that of C. J was born neither in October nor in February. There is two month gap between the birth of L and B. The month in which L was born had only 30 days. D was born in the month immediately after I. The month in which D was born had 31 days. There is 1 month gap between the birth of B and P. E and H were born in the months of 31 days.

48. In which month B was born?
- (1) December (2) June (3) March
 - (4) November (5) September
49. Four out of five are alike in a certain way and hence form a group. Which of the following does not fall in that group?
- (1) L (2) A (3) J
 - (4) K (5) B
50. Who has born in January?
- (1) J (2) L (3) Either E or H
 - (4) C (5) I
51. How many persons celebrate their birthday after F?
- (1) None (2) One (3) Two
 - (4) Five (5) Four
52. I is related to A and B to J in a certain way on the basis of the month in which they were born. On the same basis to whom is L related?
- (1) G (2) A (3) K
 - (4) E (5) H

Answers with Explanation:

1 - 7:

Bottle: N M O L Q P
 ↓ ↓ ↓ ↓ ↓ ↓
 Colour: Red White Blue Pink Violet Green

1. 4; Others are not adjacent.

2. 1 3. 3 4. 3

5. 2;

N M O L Q P
 L M N O P Q

6. 2 7. 1

8 - 14:

Serial No.	Day	Play	Time Period
1.	Monday	C	1½ hours
2.	Tuesday	A	1 hour
3.	Wednesday	E	2½ hours
4.	Thursday	F	3 hours
5.	Friday	No Play	Nil
6.	Saturday	D	2 hours
7.	Sunday	B	½ hour

8.4 9.3 10.2 11.2 12.5; Four

13 - 14:

Serial No.	Day	Play	Time Period
1.	Monday	D	2 hours
2.	Tuesday	C	1½ hours
3.	Wednesday	A	1 hour
4.	Thursday	E	2½ hours
5.	Friday	F	3 hours
6.	Saturday	No Play	Nil
7.	Sunday	B	½ hour

13.2 14.4

15 - 21:

Serial No.	Day	Subject
1.	Monday	Organizational Behaviours
2.	Tuesday	Psychology
3.	Wednesday	Statistics
4.	Thursday	Computer Science
5.	Friday	Research Methods
6.	Saturday	Off day
7.	Sunday	Economics

15.5; Economics

16.5; 5 - 1

18.3 19.3

21.1

22 - 26:

Serial No.	Day	Specialization	City
1.	Monday	Marketing	Delhi
2.	Tuesday	HR	Chennai
3.	Wednesday	Management	Pune
4.	Thursday	Banking	Indore
5.	Friday	Hospitality	Hyderabad
6.	Saturday	Real Estate	Mumbai
7.	Sunday	Finance	Bhopal

22.2 23.5 24.5 25.2 26.4

27.3:

Serial No.	Country	Person (Day)
1.	South Africa	Samir (Mon), Richa (Fri), Mohit (Sun)
2.	Australia	Paul (Thu), Nita (Tue)
3.	France	Shweta (Sat), Gifty (Wed)

27.3 28.1 29.5 30.4

31.3; Note that the last one travelled on Sunday.

32 - 36:

Serial No.	Day	Subject
1.	Monday	Physics
2.	Tuesday	Botany
3.	Wednesday	Maths
4.	Thursday	Chemistry
5.	Friday	Statistics
6.	Saturday	Zoology
7.	Sunday	English

32.1 33.4 34.3 35.4 36.2

Serial No.	Floor	Person
1.	F - 7	G
2.	F - 6	C
3.	F - 5	D
4.	F - 4	A
5.	F - 3	F
6.	F - 2	E
7.	F - 1	B

37.4 38.3

39.5; Others live on odd numbered floors.

40 - 44:

Serial No.	Person	Specialization	Sport
1.	Rajesh	Software	Hockey
2.	Anit	Metallurgy	Swimming
3.	Deepak	Electrical	Football
4.	Siddharth	Mechanical	Cricket
5.	Nilesh	Telecommunication	Badminton
6.	Varun	Hardware	Tennis

40.3 41.1 42.3

43 - 44:

Anit Deepak Nilesh Rajesh Siddharth Varun
43.5; Anit - Metallurgy - Swimming

44.5

45 - 47:

Serial No.	Person	Time
1.	E	10 minutes
2.	D	20 minutes
3.	A	30 minutes
4.	C	40 minutes
5.	B	50 minutes
6.	F	60 minutes

45.3 46.4 47.1

48 - 52:

Serial No.	Month	Person
1.	January	H or E
2.	February	I
3.	March	D
4.	April	A
5.	May	E or H
6.	June	L
7.	July	F
8.	August	G
9.	September	B
10.	October	K
11.	November	J
12.	December	C

48.5

49.4; Others born in the months consisting 30 days

50.3 51.4 52.1

Year: 100th part of a century or 12 month together forms a year

- I. **Normal year (Non leap year):** Those years which are not completely divisible by 4 or those centuries which are not completely divisible by 400 are called normal years. In any normal year there are 365 days.

For eg: 1987, 1989, 1990, 1800. Here 1800 is a century year.

- II. **Leap year:** Those non-hundred years which are completely divisible by 4 or those centuries which are completely divisible by 400 are called leap years. In a leap year there are 366 days (Having 29 days in February).

For eg: 1984, 1988, 1992, 1996, 2000. Here year 2000 is a leap year century.

Some important concept about calendar:-

1. **Normal year:** In a normal year the first and last day of the year are same day of a week.

For eg: For normal years, if 1st January = Monday then 31st December will also be Monday.

2. **Leap year:** In a leap year first and last day of a leap year are not same day of a week. Actually the last day of the year is one day ahead of the first day of the year.

For eg: For leap years, if 1st January, 1996 is Monday then 31st December, 1996 will be Tuesday.

3. **Normal year:** In any two consecutive non-leap years, the same date of the year will be one day ahead of the same date of the previous year.

For eg: 1st January, 2001 = Monday

1st January, 2002 = Tuesday

1st January, 2003 = Wednesday

4. **Previous year Vs Leap year:** If we compare a particular date of a leap year with same date of the previous year, we get that

(a) the day is one day ahead for the dates till 28th February.

For eg: If 1st Jan, 2003 is Wednesday then

1st Jan, 2004 must be Thursday.

(b) the day is two days ahead for the dates after 28th February.

For eg: If 1st June, 2003 is Sunday, then 1st June, 2004 must be Tuesday.

5. **Leap year Vs next year:** If we compare a particular date of a leap year with same date of the next year, we get that

(a) the day is two days ahead for the dates before 29th February.

For eg: If 1st Jan, 2004 is Thursday then 1st Jan, 2005 must be Saturday

(b) the day is one day ahead for the dates after 29th February.

For eg: If 1st March, 2004 is Monday then, 1st March, 2005 must be Tuesday.

Some important concept about odd days:-

Odd Days: In a given period, the number of days more than the complete weeks are called odd days.

Counting of Odd Days:

- (i) 1 ordinary year = 365 days = (52 weeks + 1 day)

Therefore, 1 ordinary year has 1 odd day.

- (ii) 1 leap year = 366 days = (52 weeks + 2 days)

Therefore, 1 leap year has 2 odd days.

- (iii) 100 years = 76 ordinary years + 24 leap years

= $(76 \times 1 + 24 \times 2)$ odd days = 124 odd days

= $(17 \text{ weeks} + 5 \text{ days})$ = 5 odd days. (If the century is not a leap year).

- Number of odd days in 100 years = 5

- Number of odd days in 200 years = $(5 \times 2) = 10 \text{ days} = 1 \text{ week} + 3 \text{ days}$ hence 3 odd days

- Number of odd days in 300 years = $(5 \times 3) = 15 \text{ days} = 2 \text{ weeks} + 1 \text{ day}$ hence 1 odd day.

- Number of odd days in 400 years = $(5 \times 4 + 1) = 21 \text{ days} = 3 \text{ weeks}$ hence 0 odd day.

Similarly, each one of 800 years, 1200 years, 1600 years, 2000 years etc will have 0 odd day.

Day Code

Sun	Mon	Tue	Wed	Thu	Fri	Sat
0	1	2	3	4	5	6

Day code play a vital role. Suppose, we have to find out what was the day of the week on 16th July, 1776?

In order to answer the above question we will calculate total number of odd days till 16th July, 1776.

If total number of odd days till 16th July, 1776 is 2. Then, the day was Tuesday (because 2 is the code for Tuesday).

Month	Number of Days	Odd Day
January	31	3
February	28 or 29	0 or 1
March	31	3
April	30	2
May	31	3
June	30	2
July	31	3
August	31	3
September	30	2
October	31	3
November	30	2
December	31	3

Some important concept about 'AFTER' and 'BEFORE'

AFTER

- I. 6 day after 10th February = x
Here, x = 6th date after 10th February
= 10 + 6 = 16
Hence, x = 16
- II. Two days after Thursday = x
Here, x = Second day after Thursday
= Thursday + 2 Days = Saturday
Hence, x = Saturday

BEFORE:

- III. The date 5 days before 10th February = x
Here, x = 10 - 5 = 5th February
- IV. Two days before Thursday = x
Here, x = 2nd day before Thursday
= Thursday - 2 Days = Tuesday
Hence, x = Tuesday

Ex. 1.

What was the day of the week on 16th July, 1776?

Sol. 16th July, 1776 = (1775 years + Period from 1.1.1776 to 16.7.1776)

Counting of Odd Days:

Number of odd days in 1600 years = 0.

Number of odd days in 100 years = 5.

75 = 15 leap years + 57 ordinary years
= (15 × 2 + 57 × 1) odd days = 93 odd days
= (43 weeks + 2 days) = 2 odd days.

Hence 1775 years have = (0 + 5 + 2) odd days = 7 odd days = 0 odd day.

Jan Feb Mar April May June July

31 + 29 + 31 + 30 + 31 + 30 + 16 = 198 days

198 days = (28 weeks + 2 days) = 2 odd days.

Total number of odd days till 16th July, 1776

= (0 + 2) = 2.

Hence, the required day is Tuesday.

Ex. 2.

On what dates of March 2005 did Friday fall?

Sol. First we find the day on 1.3.2005.

1.3.2005 = (2004 years + Period from 1.1.2005 to 1.3.2005)

Odd days in 1600 years = 0.

Odd days in 400 years = 0.

4 years = (1 leap year + 3 ordinary years)

= (1 × 2 + 3 × 1) odd days = 5 odd days.

Jan, Feb, March

31 + 28 + 1 = 60 days = (8 weeks + 4 days)

= 4 odd days.

Total Number of odd days till 01.03.2005

= (0 + 0 + 5 + 4) = 9 = 2 odd days.

Thus, 01.03.2005 was Tuesday.

Hence, Friday lies on 4th, 11th, 18th and 25th of March, 2005.

Ex. 3.

Prove that the calendar for the year 2003 will serve for the year 2014.

Sol. We must have same day on 1.1.2003 and 1.1.2014.

So, number of odd days between 31.12.2002 and 31.12.2013 must be 0.

This period will have 3 leap years and 8 ordinary years.

Number of odd days = $(3 \times 2 + 8 \times 1) = 14 = 0$ odd day.

Thus, Calendar for the year 2003 will serve for the year 2014.

Ex. 4.

It was Sunday on Jan 1, 2006. Find the day of the week on Jan 1, 2010.

Sol. On 31st December, 2005 it was Saturday. Number of odd days from the year 2006 to the year 2009 = $(1 + 1 + 2 + 1) = 5$ days.

Thus, On 31st December, 2009, it was Thursday.

Therefore, on 1st Jan, 2010 it was Friday.

Ex. 5.

On 08th Feb, 2005 it was Tuesday. What was the day of the week on 8th Feb, 2004?

Sol. The year 2004 is a leap year. It has 2 odd days.

Thus, The day on 8th Feb, 2004 is 2 days before the day on 8th Feb, 2005.

Hence, this day is Sunday.

Ex. 6.

Anupriya was born on 28 Nov., 1970, which was Sunday. When her next birthday will fall on Sunday?

- (1) 1971 (2) 1976
(3) 1981 (4) 1982

Sol. Ans. (3)

date of birth of Anupriya

28 Nov., 1970 = Sunday

28 Nov., 1971 = Monday

28 Nov., 1972 = Wednesday leap year

28 Nov., 1973 = Thursday

28 Nov., 1974 = Friday

28 Nov., 1975 = Saturday

28 Nov., 1976 = Monday leap year

28 Nov., 1977 = Tuesday

28 Nov., 1978 = Wednesday

28 Nov., 1979 = Thursday

28 Nov., 1980 = Saturday leap year

28 Nov., 1981 = Sunday

Ex. 7.

If 1st January, 2003 is Wednesday, then 31st December, 2003 will be:-

- (1) Tuesday (2) Friday
(3) Wednesday (4) Thursday

Sol. (3): 1st January, 2003 = Wednesday, then 31st Dec., 2003 = X

Note that year 2003 is a non-leap year

1st January, 2003 = Wednesday

31st December, 2003 = Wednesday

Therefore, X = Wednesday

Ex. 8.

If 1st January, 2003 is Wednesday, then 31st December, 2004 will be:-

- (1) Friday (2) Sunday
(3) Monday (4) Tuesday

Sol. (3): 1st January, 2003 = Wednesday, then 31st Dec., 2003 = Wednesday

Note that year 2003 is a non leap year

1st January, 2004 = Thursday

31st December, 2004 = Friday (leap year)

Therefore, X = Friday

Exercise:

1. If the first day of a year, which is not a leap year is Friday, which day will fall on the last day of that year?

- (1) Friday (2) Sunday (3) Monday
(4) Tuesday (5) None of these

2. How many times will 29th February come in 400 years?

- (1) 197 (2) 166 (3) 97
(4) 100 (5) None of these

3. If 10th August, 2001 was Tuesday, which day did fall on 15th September, 2002?

- (1) Thursday (2) Wednesday
(3) Saturday (4) Sunday
(5) None of these

4. If in a month 12th falls on the day which is two days after Wednesday, then which day will fall on the 28th of the same month?
(1) Saturday (2) Thursday (3) Friday
(4) Monday (5) None of these
5. Rohit was born on 15th April, 1988. His friend Anant was born five days before him. If the Republic day falls on Friday then when was Anant born?
(1) Wednesday (2) Thursday (3) Friday
(4) Saturday (5) None of these
6. If the 3rd day of a month is Monday, which day will fall on the 5th day after the 21st of that month?
(1) Thursday (2) Monday
(3) Wednesday (4) Tuesday
(5) None of these
7. If the 3rd of any month is Monday, then which day will fall on 5 days before the 21st of this month?
(1) Sunday (2) Monday (3) Tuesday
(4) Wednesday (5) None of these
8. If the 5th of any month falls on the day which is two days after Monday, then which day will fall just before the 19th of the same month?
(1) Wednesday (2) Thursday (3) Tuesday
(4) Monday (5) None of these
9. Rani's birthday falls on 4th February, 1990. Which day will fall on the day which is 47 days after her birthday? 4th February, 1990 is Sunday?
(1) Saturday (2) Friday (3) Wednesday
(4) Tuesday (5) None of these
10. How many days are there altogether in x weeks and x days.
(1) $7x^2$ (2) $8x$ (3) $14x$
(4) Data insufficient (5) None of these
11. How many days are there altogether in p weeks and q days?
(1) $(p + q)$ days (2) pq days
(3) $(7p + q)$ days (4) $(7q + p)$ days
(5) None of these
12. Which day fell on 8th June, 2007?
(1) Friday (2) Saturday
(3) Sunday (4) Wednesday
(5) None of these
13. An author was born on 2nd January, 1949. Which day of the week fell on that day?
(1) Monday (2) Tuesday
(3) Wednesday (4) Friday
(5) None of these
14. The calendar of which year is similar to the calendar of the year 1990?
(1) 1994 (2) 1996 (3) 1997
(4) 2000 (5) 2001
15. The calendar of which of the following years is similar to that of 2003?
(1) 2009 (2) 2010 (3) 2012
(4) 2014 (5) None of these
16. 5th June, 2007 was Tuesday. Which day will fall on 5th June, 2006?
(1) Sunday (2) Monday (3) Tuesday
(4) Wednesday (5) None of these
17. India became a republic on 26th January, 1950. Which day of the week was it?
(1) Monday (2) Tuesday
(3) Thursday (4) Saturday
(5) None of these
18. Today is Tuesday. Which day will it be after 62 days from today?
(1) Wednesday (2) Monday (3) Tuesday
(4) Sunday (5) None of these
19. The 1st Monday of April, 2006 was on which date?
(1) 2nd April (2) 3rd April (3) 4th April
(4) 5th April (5) None of these
20. Which day fell on 19th October, 2000?
(1) Tuesday (2) Thursday
(3) Friday (4) Saturday
(5) None of these
21. What was the date on the 1st Monday of July, 2007?
(1) 1st July (2) 2nd July (3) 3rd July
(4) 5th July (5) None of these
22. Which day fell on 28th May, 2003?
(1) Wednesday (2) Monday
(3) Saturday (4) Tuesday
(5) None of these
23. Which day fell on 29th July, 1969?
(1) Monday (2) Tuesday
(3) Wednesday (4) Friday
(5) None of these

24. Meeta correctly remembers that her father's birthday is after 8th July but before 12th July. Her brother correctly remembers that their father's birthday is after 10th July but before 15th July. On which day of July was definitely their father's birthday?
 (1) 10th (2) 11th (3) 10th or 11th
 (4) Can't be determined (5) None of these
25. Abha correctly remembers that her mother's birthday is before Friday but after Monday. Her brother Abhay correctly remembers that their mother's birthday is after Wednesday while before Saturday. On which of the following days does their mother's birthday definitely fall?
 (1) Tuesday (2) Wednesday
 (3) Thursday (4) Friday
 (5) Can't be determined
26. If date 9th of any month falls 3 days after Sunday, then which day will fall on 18th of that month?
 (1) Thursday (2) Wednesday
 (3) Friday (4) Saturday
 (5) Can't be determined
27. If 4 days after tomorrow is Sunday, then which day fell 4 days before yesterday?
 (1) Sunday (2) Tuesday
 (3) Wednesday (4) Thursday
 (5) Can't be determined
28. If 3 days before yesterday was Wednesday, then 2 days after tomorrow will be?
 (1) Wednesday (2) Monday (3) Friday
 (4) Tuesday (5) None of these
29. Day after tomorrow will be Lord Ganesha festival. In the next week the same day will be Deepawali. If today is Friday, then which day will be 4 days after Deepawali?
 (1) Saturday (2) Sunday (3) Friday
 (4) Thursday (5) Cannot be determined
30. Shekhar was born on 3rd March, 1960. Ramesh was born 6 days before Shekhar. If in the same year republic day was on Sunday, then on which day of the week Ramesh was born?
 (1) Monday (2) Wednesday
 (3) Thursday (4) Friday
 (5) Can't be determined
31. On reaching Agra Suman said that she has reached 4 days before the scheduled time. Rakesh reached there 5 days after the scheduled time. If Suman reached Agra on Sunday, then Rakesh reached there on which day?
 (1) Wednesday (2) Tuesday
 (3) Thursday (4) Friday
 (5) Can't be determined
32. After reaching a conference on Saturday I came to know that I have reached two days before the scheduled time. If I reached there on the following Thursday then, I would be late by how many days?
 (1) 1 day (2) 2 days (3) 3 days
 (4) 4 days (5) None of these
33. Gita is 314 days elder to Suman, while Sapna is 70 weeks elder to Gita. If Sapna was born on Thursday, then on which day Suman was born?
 (1) Friday (2) Tuesday
 (3) Saturday (4) Wednesday
 (5) Cannot be determined
34. If National day of any country was celebrated on fourth Sunday of month 'X', then find out on which date National day was celebrated if first day of that month was Wednesday?
 (1) 24 (2) 25 (3) 26
 (4) 27 (5) Can't be determined
35. If every Sunday of any month is on fourth, eleventh eighteenth and twenty fifth, then which day will be the last day of the month if first day of the month is Thursday?
 (1) Saturday (2) Tuesday
 (3) Thursday (4) Data insufficient
 (5) None of these
36. If 3 days after tomorrow is 15th June, which is Friday, then which day will be the last day of the month?
 (1) Monday (2) Tuesday
 (3) Wednesday (4) Thursday
 (5) None of these
37. If 4th day of a month is Saturday, then which day will be on the 27th of that month?
 (1) Monday (2) Thursday (3) Friday
 (4) Saturday (5) None of these

38. Kapil is 114 days elder to Krishna, while Kishore is 60 weeks elder to Kapil. If Kishore was born on Wednesday then on which day Krishna was born?

(1) Monday (2) Tuesday (3) Sunday
(4) Thursday (5) None of these

39. If two days after day after tomorrow of 14th April is Monday, then which day will be the last day of that month?

(1) Saturday (2) Monday (3) Sunday
(4) Wednesday (5) None of these

40. Which of following cannot be the last days of a century year?

(1) Friday, Sunday
(2) Friday, Monday
(3) Tuesday, Thursday and Saturday
(4) Wednesday, Thursday
(5) None of these

Answers with explanation:

1. 1: Note that, for a non-leap year if the first day of the year is Friday then the last day of the year will fall on Friday.
2. 3: We know every fourth year is a leap year. In a time period of 400 years, number of leap years should be $400 \div 4 = 100$. But, in a time period of 400 years, there will be four century years. Among these four century years only one century year will be a leap year, why? Because a century year will be a leap year if the year is perfectly divisible by 400.
- Hence, total number of leap years during a time period of 400 years = $100 - 3 = 97$.
- Hence, 97 times, February consisting of 29 days will appear in the time period.
3. 1: If 10th August, 2001 was Tuesday then 10th September was one day after Tuesday. Thus, we can conclude that 10th August, 2002 was Wednesday. Now, total number of days from 11th August, 2002 to 15th September, 2002 is $(21 + 15) = 36$. Again, when we divide 36 by 7, we get 1 as remainder. Hence, 15th September, 2002 will be one day after Wednesday i.e. Thursday.
4. 5: According to the information given in question part, 12th of the month falls on

Friday. We know every seventh day will fall on same day. Hence, we can conclude that $(12 + 7) = 19^{\text{th}}$ and $(19 + 7) = 26^{\text{th}}$ will also fall on Friday. Thus, 28th of the month will fall on two days after Friday i.e. Sunday.

5. 1: Let us find the date on which Anant's friend Anant is born. Five days before 15th April, 1988 implies 10th April, 1988. Now, let us find what was the day of the week on 10th April, 1988.
- In order to get your answer use the second clue. According to the clue, 26th January, 1988 was Friday. As, you know total number of days from 27th January, 1988 to 10th April, 1988 was $(5 + 29 + 31 + 10) = 75$ days. When we divide 75 by 7, we get 6 as remainder. Thus, we can conclude that 10th April, 1988 fall on five days after Friday i.e. Wednesday.
6. 3: We have information that 3rd day of a month is Monday. Now, we have to find the day which will fall on $(21 + 5) = 26^{\text{th}}$ day of the month. Now, total number of days from the fourth day of the month till 26th day of the month is $(26 - 3) = 23$. Again when we divide 23 by 7, we get 2 as remainder.
- Hence, 26th day of the month will fall on two days after Monday i.e. Wednesday.
7. 1: 5 days before 21st of the month implies 16th of the month. Total number of days from 4th of the month is $(16 - 3) = 13$. Now, if we divide 13 by 7, we get 6 as remainder. Hence, 16th day of the month will fall on 6 days after Monday i.e. Sunday.
8. 3: According to the given information, 5th day of the month is Wednesday. Therefore, $(19 - 1) = 18^{\text{th}}$ of the month will be six days after Wednesday i.e. Tuesday. Note that total number of days from 6th day of the month to 18th day of the month is 13. Again, when we divide 13 by 7, we get 6 as remainder.
9. 2: Here, divide 47 by 7. We get 5 as remainder. Hence, we can conclude that the day will fall on five days after Sunday i.e. Friday.
10. 2: In a week there are seven days
x week and x days altogether are
 $= 7x + x = 8x$

11. 3; Number of days in p weeks and q days = $(7p + q)$

12. 1; Let us find total number of odd days till 8th June, 2007.

	Odd days
I. Till 2000	: 0
II. 2001 to 2006	: 7
III. 1 st Jan, 2007	
to	
8 th June, 2007	: <u>12</u>
	19

(Jan - 3, Feb - 0, March - 3

April - 2, May - 3, June - 1)

Now, number of odd days in $(7 \times 2 + 5) = 19$ is 5.

Now, use daycode table.

Day	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Odd day	0	1	2	3	4	5	6

Since, total number of odd days till 8th June, 2007 is 5. Therefore, the day was Friday (because 5 is the daycode for Friday).

13. 5; Let us find total number of odd days till 2nd January, 1949.

	Odd days
I. Till 1900	: 1
II. 1901 to 1948	: 4
III. 1 st January, 1949	
to	
2 nd January, 1949	: <u>2</u>

7 odd days mean 0 odd day. Now, use daycode table. 0 is the day code for Sunday.

14. 5; Note that a calendar of a non-leap year will match with calendar of non-leap years only.

Also, a calendar of a non-leap year may match with the calendar of a leap year which is 6 years or 11 years after.

Therefore, you need to check the options (2) and (5) only.

Your work will be more easier if you come to know that a calendar of a non-leap year which comes after 2 or 3 years of a leap year matches with the calendar of a non-leap year which is 11 years after. But the above theory fails when any non-leap year century year passes between the time period.

Note that year 1988 is a leap year. The year 1990 is 2 years after leap year.

Hence, the calendar of the year 1990 will match perfectly with the calendar of the year 2001 (because $1990 + 11 = 2001$).

15. 4; The year 2000 is a leap year. The year 2003 is 3 years after a leap year. Therefore, the calendar of the year 2003 will match perfectly with the calendar of the year 2014 (because $2003 + 11 = 2014$).

16. 2; Here, task is very easy. 5th June, 2006 is one year before 5th June, 2007. Also, the February month which passes between the two dates consists of 28 days. Hence, we can conclude that 5th June, 2006 must fall on one day before Tuesday i.e. Monday.

17. 3; Let us calculate total number of odd days till 26th January, 1950.

	Odd days
I. 1900	: 1
II. 1901-1949	: 5
(49 + 12 = 61)	
III. 1 st Jan, 1950	
to	
26 th Jan, 1950	: <u>5</u>
	11

11 odd days mean 1 week and 4 odd days. Hence, total number of odd days till 26th Jan, 1950 is 4. We know 4 is the day code for Thursday.

18. 2; Here, divide 62 by 7. We get 6 as remainder. Hence, we can conclude that the day will fall 6 days after Tuesday i.e. Monday.

19. 2; Let us find which day falls on 1st April, 2006. For this we have to find out total number of odd days till 1st April, 2006.

	Odd days
I. Till 2000	: 0
II. 2001 to 2005	: 6
III. 1 st Jan, 2006	
to	
1 st April, 2006	: <u>0</u>
(Jan - 3, Feb - 0,	6
March 3, April - 1)	

6 implies Saturday

Now, it is clear that 1st April, 2006 was Saturday. Therefore the first Monday of April, 2006 will fall on 3rd April, 2006.

20. 2; Let us find total number of odd days till 19th October, 2000.

Odd days

I. 1900	: 1
II. 1901 to 1999 (99 + 24 = 123)	: 4
III. 1 st Jan, 2000 to 19 th Oct, 2000	: 6 11 (1 week + 4 days)

(Jan - 3, Feb - 1, March - 3, April - 2, May - 3, June - 2, July - 3, Aug - 3, Sept - 2, Oct - 5)

Total number of odd days till 19th October, 2000 is 4. Also 4 is the day code for Thursday.

Other Method: Total number of odd days till 1st Jan, 2001 is 1. Therefore, 1st Jan, 2001 was Monday. 19th October, 2000 is (13 + 30 + 31) = 74 days before 1st Jan, 2001. Now, when 74 is divided by 7 we get 4 as remainder. Hence, 19th October, 2000 must fall on 4 days before Monday i.e. on Thursday.

21. 2; First of all let us find which day falls on 1st July, 2007.

Odd days

I. 2000	: 0
II. 2001-2006	: 0
III. 1 st Jan, 2007 to 1 st July, 2007	: 0 11 (3 + 0 + 3 + 2 + 3 + 2 + 1)

Thus, we come to know that total number of odd days till 1st July, 2007 is zero. Therefore, the day was Sunday (because zero is the day code for Sunday).

Now, it's clear that the first Monday of July, 2007 falls on 2nd July, 2007.

22. 1; Once again find the total number of odd days till 28th May, 2003.

Odd days

I. 2000	: 0
II. 2001-2002	: 2
III. 1 st Jan, 2003 to 28 th May, 2003	: 1 3 (3 + 0 + 3 + 2 + 0)

Note, that 3 is the day code for Wednesday. Hence, we can conclude that 28th May, 2003 was Wednesday.

23. 2; Let us calculate total number of odd days till 29th July, 1969.

Odd days

I. Till 1900	: 1
II. 1901 - 1968 (68 + 17 = 85)	: 0
III. 1 st Jan, 1969 to 29 th July, 1969	: 0 2 (3 + 0 + 3 + 2 + 3 + 2 + 1)

Note, that 2 is the day code for Tuesday. Hence, we can conclude that 29th July, 1969 was Tuesday.

24. 2; Look at Meeta's father's and brother's statement carefully. According to their statement it is clear that Meeta's father birthday is after 10th July but before 12th July. Thus, we can conclude that the birthday was on 11th July.

25. 3; According to the given statement it is clear that Abha's mother's birthday was after Wednesday but before Friday. Hence, we conclude that birthday was on Thursday.

26. 3; 9th day of the Month : Wednesday
18th day of the Month : Friday (7 × 1 + 2)

27. 4;
| Yesterday | Tomorrow |
Thursday Today Sunday

Hence, the day was Thursday.

28. 1;
Wednesday | Today | Wednesday
Yesterday Tomorrow

29. 4; Today → Friday
Day after tomorrow → Sunday
Deepawali → Sunday
4 day after Deepawali → Thursday

30. 3; Shekhar was born on : 3rd March, 1960
Ramesh was born on : 27th Feb, 1960
26th Jan, 1960 : Sunday

Total number of days between 27th Jan to 27th Feb : 32 days

When 32 is divided by 7 we get 4 as remainder. Hence, 27th Feb, 1960 must fall on 4 days after Sunday i.e. Thursday.

31. 2. Suman reached Agra on Sunday
Schedule time Thursday
Nakesh reached Agra on Tuesday

• • • • •
32. 3. Saturday Schedule Thursday
day

33. 4. On the basis of given information we can conclude that Sapna is $(70 + 314) = 384$ days elder to Suman

Now, divide 384 by 7, we get 6 as remainder. Since, Sapna was born on Thursday, therefore, Suman was born 6 days after Thursday i.e. on Wednesday

34. 3. 1st day of the month Wednesday 5th day of the month Sunday Similarly, 12th, 19th and 26th of the month was Sunday

Since, National day was celebration on 4th Sunday, therefore we can conclude that it was 26th day of the month

35. 4. We have no information regarding total number of days in the month

36. 5. If 15th June is Friday, then $(15+7) = 22nd$ and $(22+7) = 29th June are Friday also. Thus last day of the month, i.e. 30th June will be Saturday$

37. 1. $27-4 = 23$. Divide 23 by 7 we get 2 as remainder. Therefore, 27th day of the month will fall on two days after Saturday i.e. on Monday

38. 2. Kishore Wednesday

Kapil 420 days after Wednesday

Krishna $(420+314) = 734$ days after Wednesday

Now, divide 734 by 7, we get 6 as remainder. Hence, we can conclude that Krishna was born 6 days after Wednesday i.e. on Tuesday

39. 4. If 14th April falls on Monday then $(14+7) = 21st$ and $(21+7) = 28^{th}}$ of April will fall on Monday. Thus, the last day of the month i.e. 30th April will fall on two days after Monday i.e. on Wednesday

40. 3. Note that calendar for the years 1 to 400 is same as the calendar for years 401 to 800. The calendar for the years 401 to 800 are same as the calendar for years 801 to 1200. The same is true for 1201 to 1600, 1601 to 2000, 2001 to 2400..... and so on.

Look at the last day of four century years

31st Dec., 1700 : Friday

31st Dec., 1800 : Wednesday

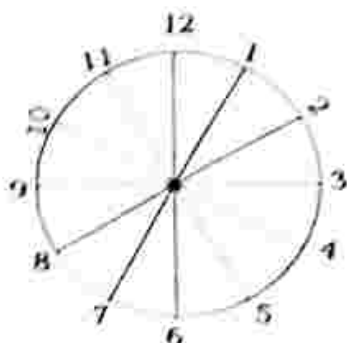
31st Dec., 1900 : Monday

31st Dec., 2000 : Sunday

The above result is true for all century years.

Thus, we can conclude that Tuesday, Thursday and Saturday can't be the last day of any century year.

We all are familiar with the clocks. Let us understand it in relation to second, minute and hour hand



In a clock if any hand completes one revolution, then it completes 360° , and in one revolution the second hand, minute hand, hour hand covers 60 seconds, 60 minutes, 12 hours respectively.

For second hand: $\rightarrow 60 \text{ seconds} \rightarrow 360^\circ$

$$1 \text{ sec} \rightarrow 6^\circ$$

$$5 \text{ sec} \rightarrow 30^\circ$$

For minute hand: $\rightarrow 60 \text{ minutes} \rightarrow 360^\circ$

$$1 \text{ minute} \rightarrow 6^\circ$$

5 minutes $\rightarrow 30^\circ$

Also for

Hour hand: $\rightarrow 12 \text{ hours} \rightarrow 360^\circ$

$$1 \text{ hour} \rightarrow 30^\circ$$

Now we will study the relation between the hands of a clock.

When second hand has moved by 5 seconds then how much will the minute hand move?

In 1 min., the minute hand moves by 6°

Hence in 5 seconds i.e. in $\frac{5}{60}$ min it moves by

$$\frac{5}{60} \times 6^\circ = 0.5^\circ$$

In 5 second $= 0.5^\circ$ is moved by minute hand

For every 1 sec., minute hand will move by 0.1°

Important

$$1 \text{ sec} = 0.1^\circ \text{ of minute hand}$$

In 60 minutes, the minute hand gains 55 minutes on the hour hand.

The dial of a clock is a circle whose circumference is divided into 12 parts, called **hour spaces**. Each **hour space** is further divided into 5 parts, called **minute spaces**. Thus way, the whole circumference is divided into $12 \times 5 = 60$ minute spaces.

The time taken by the hour hand (smaller hand) to cover a distance of an hour space is equal to the time taken by the minute hand (longer hand) to cover a distance of the whole circumference. Thus, we may conclude that **in 60 minutes, the minute hand gains 55 minutes on the hour hand.**

In an hour, the hour-hand moves a distance of 5 minute spaces whereas the minute-hand moves a distance of 60 minute spaces. Thus the minute-hand remains $60 - 5 = 55$ minute spaces ahead of the hour-hand.

The above conclusion is very much useful in solving the problems related with Clock. Therefore do remember it.

Besides it you need to know some other important facts also

Both hands	Required Angle	Number of times it happens in 12 hours
to be coincident	0°	11
to be at right angle	90°	22
to be in opposite direction	180°	11
to be in straight line	$0^\circ \text{ or } 180^\circ$	22

• The clock is divided into 60 equal minute divisions.

• 1 minute division $= \frac{360^\circ}{60} = 6^\circ$ apart

- rated by five minute divisions ($= 5 \times 6^\circ = 30^\circ$) apart.
- In one minute, the minute hand moves one minute division or 6° .
- In one minute, the hour hand moves $\frac{1^\circ}{2}$.
- In one minute the minute hand gains $5\frac{1}{2}^\circ$ more than hour hand.
- When the hands are together, they are 0° apart.
- In every hour, both the hands coincide once but during 11 O'clock to 1 O'clock it happens only once at 12 O'clock.
- When the two hands are at right angle, they are 15 minute spaces apart. This happens twice in every hour but during 8 O'clock to 10 O'clock it happens three times only.
- When the hands are in opposite directions, they are 30 minute spaces apart. This happens once in every hour but from 5 O'clock to 7 O'clock it happens only once.
- The hands are in the same straight line when they are coincident or opposite to each other.
- The hour hand moves around the whole circumference of clock once in 12 hours. So the minute hand is twelve times faster than hour hand.

1. What angle is covered by hour hand in 1 second?

Sol. In 12 hours the hour hand covers 360°
 In 1 hour (60 min.) the hour hand covers

$$\frac{360^\circ}{12} = 30^\circ$$

In 1 hour i.e. (60 $\times$ 60 sec.) the hour hand covers 30°

In 1 second the hour hand covers

$$1 \text{ Sec.} = \frac{1}{120^\circ} \text{ is covered by hour hand}$$

2. What angle is covered by minute hand in 1 second?

Sol. In 1 hour i.e. (60 min.) angle covered by min. hand $= 360^\circ$

In 1 min. angle covered by min. hand

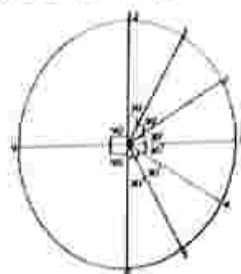
$$\frac{360^\circ}{60} = 6^\circ$$

i.e. in 60 sec. angle covered by min. hand 6°

$$1 \text{ sec.} = \frac{6^\circ}{60} = \frac{1^\circ}{10} = 0.1^\circ$$

$$1 \text{ Sec.} = 0.1^\circ \text{ is covered by min. hand}$$

For better understanding of the angles see the diagram given below



Clock

Ex. 1. At what time between 3 and 4 O'clock are the hands of a clock together?

Sol. At 3 O'clock, the hour hand is at 3 and the minute hand is at 12, i.e., they are 15 min. spaces apart. To be together, the minute hand must gain 15 min. over the hour hand.

We know 55 min. are gained in 60 min.

$\therefore$ 15 min. will be gained in

$$\left[\frac{60}{55} \times 15 \right] \text{ min.} = 16\frac{1}{4} \text{ min.}$$

So, the hands will coincide at $16\frac{4}{11}$ min. past 3.

Ex. 2. At what time between 4 and 5 O'clock will the hand of clock be at right angle?

Sol. At 4 O'clock, the minute hand will be 20 min. spaces behind the hour hand.

Now, when the two hands are at right angle, they are 15 min. spaces apart.

So, there are two possible cases:

Case (I): When the min. hand is 15 min. spaces behind the hour hand.

To be in this position, the min. hand will have to gain $(20 - 15) = 5$ min. spaces.

We know,

55 min. spaces are gained in 60 min.

$\therefore$ 5 min. spaces are gained in

$$\left[\frac{60}{55} \times 5 \right] \text{ min.} = 5 \frac{5}{11} \text{ min. past 4.}$$

Case (II): When the min. hand is 15 min. spaces ahead of the hour hand.

To be in this position, the min. hand will have to gain $(20 + 15) = 35$ min. spaces.

Now, 55 min. spaces are gained in 60 min.

$\therefore$ 35 min. spaces will be gained in $\left[\frac{60}{55} \times 35 \right]$

$$\text{min.} = 38 \frac{2}{11} \text{ min.}$$

So, they are at right angle at $38 \frac{2}{11}$ min. past 4.

Ex. 3. Find at what time between 8 and 9 O'clock will the hands of a clock be in the same straight line but not together.

Sol. At 8 O'clock, the hour hand is at 8 and the min. hand is at 12 i.e., the two hands are 20 min. spaces apart.

To be in the same straight line but not together they will be 30 min. spaces apart.

So, the min. hand will have to gain $(30 - 20) = 10$ min. spaces over the hour hand.

Now, 55 min. are gained in 60 min.

10 min. will be gained in $\left[\frac{60}{55} \times 10 \right]$ min.

$$= 10 \frac{10}{11} \text{ min.}$$

The hands will be in straight line at $10 \frac{10}{11}$ min. past 8.

Ex. 4. At what time between 5 and 6 are the hands of a clock will be 3 minutes apart?

Sol. At 5 O'clock, both the hands are 25 minute spaces apart.

Case I: Minute hand is 25 minute spaces apart. In this case, the minute hand has to gain $(25 - 3)$ i.e., 22 minute spaces.

Now, 55 min. are gained in 60 min.

22 min. are gained in

$$\left[\frac{60}{55} \times 22 \right] \text{ min.} = 24 \text{ min.}$$

$\therefore$ The hand will be 3 minutes spaces apart at 24 min. past 5.

Case II: Minute hand is 3 minute spaces ahead of the hour hand.

In this case, the minute hand has to gain $(25 + 3)$ i.e., 28 minute spaces.

Now, 55 min. are gained in 60 min.

28 min. are gained in

$$\left[\frac{60}{55} \times 28 \right] = 30 \frac{6}{11} \text{ min.}$$

The hands will be 3 minutes spaces apart

at $30 \frac{6}{11}$ min. past 5.

Ex. 5. The minute hand of a clock overtakes the hour hand at intervals of 65 minutes of correct time. How much does the clock gain or lose in a day?

Sol. In a correct clock, the minute hand gains 55 minute spaces over the hour hand in 60 minutes. To be together again, the minute hand must gain 60 minutes over the hour hand.

Now, 55 min. are gained in 60 min.

60 min. are gained in $\left[\frac{60}{55} \times 60 \right]$ min.

$$= 65 \frac{5}{11} \text{ min.}$$

But, they are together after 65 minutes.

$$\text{Gain in 65 minutes} = \left[65 \frac{5}{11} - 65 \right] = \frac{5}{11} \text{ min.}$$

$$\text{Gain in 24 hrs.} = \left[\frac{5}{11} \times \frac{60 \times 24}{65} \right] \text{ min.}$$

$$= 10 \frac{10}{143} \text{ min.}$$

Ex. 6. A watch which gains uniformly, is 5 min. slow at 8 O'clock in the morning on Sunday, and is 5 minutes 48 seconds fast at 8 pm on following Sunday. When was it correct?

Sol. Time from 8 am on Sunday to 8 pm on following Sunday = 7 days 12 hours = 180 hours

$$\text{Thus, the watch gains} \left[5 + 5 \frac{4}{5} \right] \text{ min.}$$

$$\text{or } \frac{54}{5} \text{ min. in 180 hours}$$

$$\text{Now, } \frac{54}{5} \text{ min. are gained in 180 hours.}$$

$$5 \text{ min. are gained in } \left[\frac{180 \times 5 \times 5}{54} \right] \text{ hours.}$$

$$= 83 \frac{1}{3} \text{ hrs}$$

= 83 hrs. 20 min. after 8 am on Sunday
Thus, the watch is correct after 3 days 11 hrs. 20 min. after 8 am on Sunday i.e., it will be correct at 20 min. past 7 pm on Wednesday.

Ex. 7. A clock is set right at 8 am. The clock gains 10 minutes in 24 hours. What will be the true time when the clock indicates 1 pm on the following day?

Sol. Time from 8 am on a day to 1 pm on the following day is 29 hrs.

$$\text{Now, 24 hrs. 10 min. of this clock} = 24 \text{ hrs. of the correct clock}$$

Or,

$$(24 \text{ hrs.} + 10 \text{ min.} = 24 + \frac{10}{60} = \frac{145}{6} \text{ hrs.})$$

$$= 24 \text{ hrs. of the correct clock.}$$

Here $\frac{145}{6}$ hrs. of this clock = 24 hrs. of the correct clock.

$$\therefore 1 \text{ hr} = \frac{24 \times 6}{145}$$

$$\text{So, 29 hrs. of the clock} = \left[\frac{24 \times 6}{145} \times 29 \right] \text{ hrs.}$$

of correct clock = 28 hrs. 48 min. of the correct clock

So, the correct time is 8 am + 28 hrs. 48 min.

$$= 12 : 48 \text{ pm. Ans.}$$

Ex. 8. A clock is set right at 5 am. The clock loses 16 minutes in 24 hours. What will be the true time when the clock indicates 10 pm on the 4th day?

Sol. Time from 5 am on a day to 10 pm on 4th day is 89 hours.

Now, 23 hrs. 44 min. $\left[\frac{356}{15} \text{ hrs} \right]$ of this clock are the same as 24 hours of the correct clock.

i.e. $\frac{356}{15}$ hrs of this clock = 24 hrs. of correct clock.

$$89 \text{ hrs. of this clock} = \left[\frac{24 \times 15}{356} \times 89 \right] \text{ hrs. of}$$

correct clock.

$$= 90 \text{ hrs. of correct clock.}$$

So, the correct time is 11 pm **Ans.**

Ex. 9. What smaller angle will the hour hand and minute hand make at 5 : 15 am?

Sol. Speed of hour hand = 30° per hour

$$= \frac{30^\circ}{60} \text{ per minute}$$

$$= \left[\frac{1}{2} \right]^\circ \text{ per minute}$$

$$\therefore \text{The angle of hour hand from 12 at 5 : 15} = 5 \times 30^\circ + 15 \times \frac{1}{2}^\circ = 150^\circ + 7.5^\circ = 157.5^\circ$$

The angle of minute hand from

$$12 \text{ at 15 minutes} = 3 \times 30^\circ = 90^\circ$$

Angle between hour hand and minute hand will be = $157.5^\circ - 90^\circ = 67.5^\circ$ **Ans.**

Ex. 10. What will be the smaller angle between hour hand and minute hand at 8 : 30 pm?

Sol. Angle between hands

$$= 30^\circ \times 8 - 30 \times 6^\circ + 30 \times \frac{1}{2}^\circ$$

$$= 240^\circ - 180^\circ + 15^\circ = 240^\circ - 165^\circ$$

$$= 75^\circ \text{ Ans.}$$

UNIQUE RULE:

To find the angle between the hour hand and the minute hand

- I. Multiply 30° to the given hour digit and $11/2^\circ$ to the minute and subtracts the smaller result to the bigger one.**

Ex. What will be the angle between hour hand and minute hand at 8 : 30 pm?

$$= 8 \times 30^\circ = 240^\circ, = 165^\circ$$

$$= 240^\circ - 165^\circ = 75^\circ \text{ Ans.}$$

- II. If the result of this subtraction is more than 180° than we should subtract the result from 360° .**

Ex. Find the angle between hour hand and minute hand when the time is 1 : 52 (am/pm).

Sol. $01 \times 30^\circ = 30^\circ$

$$52 \times 11/2^\circ = 286^\circ$$

According to the rule, $286^\circ - 30^\circ = 256^\circ$

(But, the finding result is more than 180° so, we should subtract it from 360°)

$$\text{thus, } 360^\circ - 256^\circ = 104^\circ \text{ Ans.}$$

Exercise:

1. At what time between 3 and 4 O'clock are the hands of a clock together?

(1) $16\frac{5}{11}$ min. past 3

(2) $16\frac{7}{11}$ min. past 3

(3) $16\frac{1}{11}$ min. past 3

(4) None of these

2. At what time between 5 and 6 are the hands of a clock coinciding each other?

(1) 22 minutes past 5

(2) 30 minutes past 5

(3) $22\frac{8}{11}$ minutes past 5

(4) $27\frac{3}{11}$ minutes past 5

3. At what time between 9 and 10 will the hands of a clock be together?

(1) 45 minutes past 9

(2) 50 minutes past 9

(3) $49\frac{1}{11}$ minutes past 9

(4) $48\frac{2}{11}$ minutes past 9

4. At what time are the hands of a clock together between 2 and 3?

(1) $10\frac{10}{11}$ min. past 2

(2) $10\frac{9}{11}$ min. past 2

(3) $10\frac{8}{11}$ min. past 2

(4) None of these

5. At what time between 5 and 5:30 O'clock will the hands of a clock be at right angle?

(1) $10\frac{10}{11}$ min. past 5

(2) $10\frac{9}{10}$ min. past 5

(3) $11\frac{10}{11}$ min. past 5

(4) None of these

6. At what times are the hands of a clock at right angles between 7 am and 8 am?

(1) $54\frac{6}{11}$ min. past 7, $21\frac{9}{11}$ min. past 7

(2) $52\frac{5}{11}$ min. past 7, $21\frac{8}{11}$ min. past 7

(3) $56\frac{6}{11}$ min. past 7, $21\frac{8}{11}$ min. past 7

(4) None of these

7. At what time between 5.30 and 6 will the hands of a clock be at right angles?
- $43\frac{5}{11}$ minutes past 5
 - $43\frac{7}{11}$ minutes past 5
 - 40 minutes past 5
 - 45 minutes past 5
8. At which of the following times between 10 and 11 O'clock will the hands of a clock be at right angle?
- $38\frac{2}{11}$ min. past 10
 - $6\frac{5}{11}$ min. past 10
 - $38\frac{3}{11}$ min. past 10
 - $8\frac{2}{11}$ min. past 10
9. Find at what time between 8 and 9 O'clock will the hands of a clock be in the same straight line but not together.
- $10\frac{10}{11}$ min. past 8
 - $10\frac{9}{11}$ min. past 8
 - $11\frac{10}{11}$ min. past 8
 - None of these
10. Find at what time between 2 and 3 O'clock will the hands of a clock be in the same straight line but not together.
- $4\frac{4}{11}$ min. past 2
 - $43\frac{7}{11}$ min. past 2
 - $43\frac{3}{11}$ min. past 2
 - None of these
11. Find at what time between 9 and 10 O'clock will the hands of a clock be in the same straight line but not together.
- $16\frac{4}{11}$ min. past 9
 - $16\frac{5}{11}$ min. past 9
 - $16\frac{3}{11}$ min. past 9
 - None of these
12. At which of the following times between 5 and 6 are the hands of a clock 3 minutes apart?
- 24 min. past 5
 - 26 min. past 5
 - $30\frac{5}{11}$ min. past 5
 - 22 min. past 5
13. At which of the following times between 4 and 5 are the hands of a clock 3 minutes apart?
- $18\frac{6}{11}$ min. past 4
 - $26\frac{5}{11}$ min. past 4
 - $25\frac{5}{11}$ min. past 4
 - $25\frac{3}{11}$ min. past 4
14. At what time between 3 and 4 is the minute-hand 7 minutes ahead of the hour-hand?
- $8\frac{8}{11}$ min. past 3
 - 24 min. past 3
 - 25 min. past 3
 - 22 min. past 3
15. At what time between 3 and 4 is the minute-hand 4 minutes behind the hour-hand?
- 12 minutes past 3
 - 11 minutes past 3
 - 19 minutes past 3
 - None of these

16. The minute hand of a clock overtakes the hour hand at intervals of 63 minutes of correct time. How much a day does the clock gain or lose?
- (1) $56\frac{8}{77}$ min. gain
(2) $56\frac{8}{77}$ min. lose
(3) $57\frac{8}{77}$ min. gain
(4) $57\frac{8}{77}$ min. lose
17. How much does a watch gain or lose per day, if its hands coincide every 64 minutes of correct time?
- (1) $32\frac{8}{11}$ min. gain
(2) $31\frac{8}{11}$ min. gain
(3) $32\frac{3}{11}$ min. gain
(4) $32\frac{8}{11}$ min. lose
18. At which of the following times between 3 and 4 O'clock when the angle between the hands of a watch is one-third of a right angle.
- (1) $10\frac{10}{11}$ min. past 3
(2) $10\frac{9}{11}$ min. past 3
(3) $11\frac{9}{11}$ min. past 3
(4) $21\frac{10}{11}$ min. past 3
19. Find the smaller angle between the two hands of a clock of 15 minutes past 4 O'clock.
- (1) 38.5° (2) 36.5°
(3) 37.5° (4) None of these
20. Find the smaller angle between the two hands of a clock at 4.30 pm.
- (1) 45° (2) 30°
(3) 60° (4) None of these
21. At what angle (smaller) are the two hands of a clock inclined at 20 minutes past 5?
- (1) 30° (2) 45° (3) 50° (4) 40°
22. At what angle (smaller) are the two hands of a clock inclined at 32 minutes past 9?
- (1) 94° (2) 95° (3) 93° (4) 92°
23. At what angle (smaller) are the two hands of a clock inclined at 17 minutes past 9?
- (1) $167\frac{1}{2}^\circ$ (2) $172\frac{1}{2}^\circ$ (3) $168\frac{1}{2}^\circ$ (4) $176\frac{1}{2}^\circ$
24. At what angle are the two hands of a clock inclined at 38 minutes past 7?
- (1) 01° (2) 02° (3) 03° (4) 1°
25. At what angle (larger) are the two hands of a clock inclined at 48 minutes past 12?
- (1) 264° (2) 263° (3) 265° (4) 266°
26. At what angle are the two hands of a clock inclined at 4 minutes to 12?
- (1) 22° (2) 20° (3) 21° (4) 23°
27. How many times do the hands of a clock point opposite to each other in 12 hours?
- (1) 6 times (2) 10 times
(3) 11 times (4) 12 times
28. How many times are the hands of a clock at right angles in a day?
- (1) 24 times (2) 48 times
(3) 22 times (4) 44 times
29. How many times in a day are the hands of a clock straight?
- (1) 48 times (2) 24 times
(3) 44 times (4) 22 times
30. A watch which gains uniformly, is 5 min. slow at 8 O'clock in the morning on Sunday, and is 5 min. 48 sec. fast at 8 pm on following Sunday. When was it correct?
- (1) 20 min. past 7 pm on Tuesday
(2) 20 min. past 7 pm on Wednesday
(3) 10 min. past 7 pm on Tuesday
(4) 10 min. past 7 pm on Wednesday
31. A clock is set right at 8 am. The clock gains 10 minutes in 24 hours. What will be the true time when the clock indicates 1 pm on the following day?
- (1) 28 hrs. (2) 28 hrs. 48 min.
(3) 28 hrs. 42 min.
(4) None of these

32. A clock is set right at 4 am. The clock loses 20 min. in 24 hours. What will be the true time when the clock indicates 3 am on 4th day?

(1) 4 am (2) 5 am (3) 3 am (4) 4 pm

33. A watch, which gains uniformly is 2 min. slow at noon on Monday, and is 4 min. 48 seconds fast at 2 pm on the following Monday. When was it correct?

(1) 2 pm on Tuesday
(2) 2 pm on Wednesday
(3) 3 pm on Thursday
(4) 1 pm on Friday

34. A watch which gains 5 seconds in 3 minutes was set right at 7 am. In the afternoon of the same day when the watch indicated quarter past 4 O'clock, the true time is-

(1) $59\frac{7}{12}$ minutes past 3
(2) 4 pm
(3) $58\frac{7}{11}$ minutes past 3
(4) $2\frac{3}{11}$ minutes past 4

35. How many times do the hands of a clock coincide in a day?

(1) 24 (2) 20 (3) 21 (4) 22

36. At what time between 4 and 5 will the hands of a watch be equidistant from the figure 5.

(1) $27\frac{9}{11}$ min. past 4
(2) $27\frac{8}{13}$ min. past 4
(3) $27\frac{9}{13}$ min. past 4
(4) None of these

37. The hands of a clock coincide every 65 minutes of correct time. How much does the clock gain or lose in 24 hours?

(1) $11\frac{10}{143}$ min. gain
(2) $10\frac{10}{143}$ min. lose
(3) $10\frac{9}{143}$ min. gain
(4) None of these

Directions (38 - 42): The questions given below are based on a vertical mirror and a clock. The clock has dots on its dial and not numbers written on it. Read the questions carefully and find out the real/reflected time.

38. If the real time is 12 : 30, then what is the time shown by the reflection?

(1) 12 : 30 (2) 11 : 30
(3) 6 : 30 (4) 1 : 30

39. If the time by any clock is 6 O'clock, what is the reflected time?

(1) 12 : 30 (2) 6 : 00
(3) 6 : 30 (4) 12 : 00

40. If the time shown by the reflection is 1 : 40, then what is the real time?

(1) 11 : 40 (2) 5 : 45
(3) 10 : 20 (4) 11 : 20

41. If the time shown by the reflection is 12 : 25, then what is the real time?

(1) 12 : 25 (2) 12 : 35
(3) 11 : 35 (4) 10 : 35

42. If on the dial of a clock, we substitute the numbers with the reversed order of alphabets K to V so that 'V' substitutes '5' and 'U' substitutes '6' and the process is continued, then which alphabet will come in place of 11?

(1) Q (2) O (3) M (4) P

Answer with explanations:

1. 3; At 3 O'clock, the hour hand is at 3 and the minute hand is at 12. It means that they are 15 min. spaces apart. To be together, the minute hand must gain 15 minutes over the hour hand. Now, we know that 55 min. are gained in 60 min.
 $\therefore$ 15 min. are gained in

$$\frac{60}{55} \times 15 = \frac{180}{11} = 16\frac{4}{11} \text{ min.}$$

Therefore, the hands will be together at

$$16\frac{4}{11} \text{ min. past 3.}$$

2. 4; At 5 O'clock, the hour hand is at 5 and the minute hand is at 12. It means that they are 25 min. spaces apart. To be coincide, the minute hand must gain 25 minutes over the hour hand. Now, we know that 55 min. are gained in 60 min.

$\therefore 25$ min. are gained in

$$\frac{60}{55} \times 25 = \frac{300}{11} = 27 \frac{3}{11} \text{ min.}$$

Therefore, the hands will be together at

$$27 \frac{3}{11} \text{ min. past 5.}$$

3. 3. At 9 O'clock, the hour hand is at 9 and the minute hand is at 12. It means that they are 45 min. spaces apart. To be together, the minute hand must gain 45 minutes over the hour hand. Now, we know that 55 min. are gained in 60 min.

$\therefore 45$ min. are gained in

$$\frac{60}{55} \times 45 = \frac{540}{11} = 49 \frac{1}{11} \text{ min.}$$

Therefore, the hands will be together at

$$49 \frac{1}{11} \text{ min. past 9.}$$

4. 2. At 2 O'clock, the hour hand is at 2 and the minute hand is at 12. It means that they are 10 min. spaces apart. To be together, the minute hand must gain 10 minutes over the hour hand. Now, we know that 55 min. are gained in 60 min.

$\therefore 10$ min. are gained in

$$\frac{60}{55} \times 10 = \frac{120}{11} = 10 \frac{10}{11} \text{ min.}$$

Therefore, the hands will be together at

$$10 \frac{10}{11} \text{ min. past 2.}$$

5. 1. At 5 O'clock, there are 25 min. spaces between hour and minute hands. To be at right angle, they should be 15 min. spaces apart. To be in this position, the min. hand should have to gain $25 - 15 = 10$ min. spaces.

Now, we know that 55 min. spaces are gained in 60 min.

$\therefore 10$ min. spaces are gained in

$$\frac{60}{55} \times 10 = \frac{120}{11} = 10 \frac{10}{11} \text{ min.}$$

$\therefore$ they are at right angle at $10 \frac{10}{11}$ min. past 5.

6. 1. At 7 O'clock, there are 35 min. spaces between hour and minute hands. To be at right angle, they should be 15 min. spaces apart. So, there are two cases:

Case I:

When the minute hand is 15 min. spaces behind the hour hand.

To be in this position, the min. hand should have to gain $35 - 15 = 20$ min. spaces.

Now, we know that 55 min. spaces are gained in 60 min.

$\therefore 20$ min. spaces are gained in

$$\frac{60}{55} \times 20 = \frac{240}{11} = 21 \frac{9}{11} \text{ min.}$$

$\therefore$ they are at right angle at $21 \frac{9}{11}$ min. past 7.

Case II:

When the minute hand is 15 min. spaces ahead of the hour hand.

To be in this position, the min. hand should have to gain $35 + 15 = 50$ min. spaces.

Now, we know that 55 min. spaces are gained in 60 min.

$\therefore 50$ min. spaces will be gained in

$$\frac{60}{55} \times 50 = \frac{600}{11} = 54 \frac{6}{11} \text{ min.}$$

$\therefore$ they are at right angle at $54 \frac{6}{11}$ min. past 7.

7. 2. At 5 O'clock, there are 25 min. spaces between hour and minute hands. To be at right angle, they should be 15 min. spaces apart. So, there are two cases:

Case I:

When the minute hand is 15 min. spaces behind the hour hand.

Reject the case I, because this incidence will happen before 5 : 30.

Case II:

When the minute hand is 15 min. spaces ahead of the hour hand.

To be in this position, the min. hand should have to gain $25 + 15 = 40$ min. spaces.

Now, we know that 55 min. spaces are gained in 60 min.

$\therefore 40$ min. spaces will be gained in

$$\frac{60}{55} \times 40 = \frac{480}{11} = 43 \frac{7}{11} \text{ min.}$$

$\therefore$ they are at right angle at $43 \frac{7}{11}$ min. past 5.

8. 1. At 10 o'clock, there are 50 min. spaces between hour and minute hands. To be at right angle they should be 15 min. spaces apart. So there are two cases.

Case I:

When the minute hand is 15 min. spaces behind the hour hand.

To be in this position, the min. hand should have to gain 50 - 15 = 35 min. spaces.

Now, we know that 60 min. spaces are gained in 60 min.

35 min. spaces are gained in

$$\frac{60}{60} \times 35 = \frac{420}{11} = 38 \frac{2}{11} \text{ min.}$$

they are at right angle at $38 \frac{2}{11}$ min. past 10.

Case II:

When the minute hand is 15 min. spaces ahead of the hour hand.

To be in this position, the min. hand should have to gain 15 - 50 = -35 min. spaces.

Now, we know that 60 min. spaces are gained in 60 min.

-35 min. spaces will be gained in

$$\frac{60}{60} \times -35 = -35 \frac{5}{11} \text{ min.}$$

they are at right angle at $35 \frac{5}{11}$ min. past 10.

9. 1. To be in same straight line (but not together) the angle between the hour and minute hands must be 180° , i.e., 30 min. spaces apart.

At 8 o'clock, they are 40 min. spaces apart.

Therefore, to be in opposite directions the min. hand will have to gain 40 - 30 = 10 min. spaces.

Now, 10 min. spaces will be gained in

$$\frac{60}{60} \times 10 = \frac{120}{11} = 10 \frac{10}{11} \text{ min.}$$

the hand will in opposite directions at $10 \frac{10}{11}$ min. past 8.

10. 2. To be in same straight line (but not together) the angle between the hour and minute hands must be 180° , i.e., 30 min.

spaces apart.

At 2 o'clock, they are 10 min. spaces apart.

Therefore, to be in opposite directions the minute hand will have to gain 30 - 10 = 20 min. spaces.

Now, 20 min. spaces will be gained in

$$\frac{60}{60} \times 20 = \frac{400}{11} = 36 \frac{4}{11} \text{ min.}$$

the hand will in opposite directions at $36 \frac{4}{11}$ min. past 2.

11. 1. To be in same straight line (but not together) the angle between the hour and minute hands must be 180° , i.e., 30 min. spaces apart.

At 9 o'clock, they are 15 min. spaces apart.

Therefore, to be in opposite directions the minute hand will have to gain

$$30 - 15 = 15 \text{ min. spaces.}$$

Now, 15 min. spaces will be gained in

$$\frac{60}{60} \times 15 = 15 \frac{5}{11} \text{ min.}$$

Hence the hand will in opposite directions at $15 \frac{5}{11}$ min. past 9.

12. 1. At 5 o'clock, the min. hands are 25 min. spaces apart.

Case I:

When the minute hand is 3 minute spaces behind the hour hand.

In this case, the minute hand will have to gain (25 - 3), i.e., 22 minute spaces.

Now, we know that 22 min. spaces will be gained in

$$\frac{60}{60} \times 22 = 24 \text{ min.}$$

Hence they will be 3 min. apart at 24 min. past 5.

Case II:

When the minute hand is 3 min. spaces ahead of the hour hand.

In this case, the minute hand will have to gain (25 + 3), i.e., 28 minute spaces.

Now, we know that 28 minute spaces will be gained in

$$\frac{60}{60} \times 28 = \frac{336}{11} = 30 \frac{6}{11} \text{ min.}$$

Hence, the hands will be 3 min. apart at $30\frac{6}{11}$ min. past 5.

13. 1; At 4 O'clock, the two hands are 20 min. spaces apart.

Case I:

When the minute hand is 3 minute spaces behind the hour hand.

In this case, the minute hand will have to gain (20 - 3), i.e. 17 minute spaces. Now, we know that 17 min. spaces will be gained in

$$\frac{60}{55} \times 17 = \frac{204}{11} = 18\frac{6}{11} \text{ min.}$$

Hence, they will be 3 min. apart at $18\frac{6}{11}$ min. past 4.

Case II:

When the minute hand is 3 min. spaces ahead of the hour hand.

In this case, the min-hand will have to gain (20 + 3), i.e. 23 minute spaces. Now, we know that 23 minute spaces will be gained in

$$\frac{60}{55} \times 23 = \frac{276}{11} = 25\frac{1}{11} \text{ min.}$$

Hence the hands will be 3 min. apart at $25\frac{1}{11}$ min. past 4.

14. 2; At 3 O'clock, the two hands are 15 min. spaces apart.

When the minute hand is 7 min. spaces ahead of the hour hand. In this case, the min-hand will have to gain (15 + 7), i.e. 22 minute spaces.

Now, we know that 22 minute spaces will be gained in $\frac{60}{55} \times 22 = 24$ min.

Hence, the minute hand will be 7 min. spaces ahead of the hour hand at 24 min. past 3.

15. 1; At 3 O'clock, the two hands are 15 min. spaces apart.

When the minute hand is 4 minute spaces behind the hour hand. In this case, the minute hand will have to gain (15 - 4), i.e. 11 minute spaces. Now, we know that 11 min. spaces will be gained in

$$\frac{60}{55} \times 11 = 12 \text{ min.}$$

Hence, they will be 4 min. apart at 12 min.

past 3.

16. 1; In a correct clock, the minute hand gains 55 min. spaces over the hour-hand in 60 minutes. To be together again, the minute-hand must gain 60 min. over the hour-hand.

We know that 60 min. are gained in

$$\frac{60}{55} \times 60 = 65\frac{5}{11} \text{ min.}$$

But they are together after 63 minutes. Hence, gain in 63 minutes

$$= 65\frac{5}{11} - 63 = 2\frac{5}{11} \text{ min.}$$

Therefore gain in 24 hrs.

$$= \frac{27 \times 60 \times 24}{11 \times 63} = 32\frac{8}{11} \text{ min.}$$

17. 1; In a correct clock, the minute hand gains 55 min. spaces over the hour-hand in 60 minutes. To be together again, the minute-hand must gain 60 min. over the hour-hand.

We know that 60 min. are gained in

$$\frac{60}{55} \times 60 = 65\frac{5}{11} \text{ min.}$$

But they are together after 64 minutes. Hence gain in 64 minutes

$$= 65\frac{5}{11} - 64 = 1\frac{5}{11} = \frac{16}{11} \text{ min.}$$

Therefore gain in 24 hrs.

$$= \frac{16 \times 60 \times 24}{11 \times 64} = 32\frac{8}{11} \text{ min.}$$

18. 1; At 3 O'clock the two hands of the clock are 15 minute spaces apart. Here we have to look for the time when the angle between the two hands are 30° . Note that 30° means 5 minute spaces apart. There will be two such cases.

Case I:

When the minute hand is 5 minute spaces behind the hour hand.

In this case, the minute hand will have to gain (15 - 5), i.e. 10 minute spaces. Now, we know that 10 min. spaces will be gained in

$\therefore$ 10 min. are gained in

$$\frac{60}{55} \times 10 = \frac{120}{11} = 10\frac{10}{11} \text{ min.}$$

Therefore, the hands will be together at

$10\frac{10}{11}$ min. past 3.

Hence they will be 5 min. spaces apart at

$10\frac{10}{11}$ min. past 3.

Case II:

When the minute hand is 5 min. spaces ahead of the hour hand.

In this case, the minute hand will have to gain $(15 + 5)$, i.e. 20 minute spaces.

Now, we know that 20 minute spaces will be gained in

$\therefore$ 20 min. spaces are gained in

$$\frac{60}{55} \times 20 = \frac{240}{11} = 21\frac{9}{11} \text{ min.}$$

Hence, they will be 5 min. spaces apart

at $21\frac{9}{11}$ min. past 3.

- 19.3; At 4 O'clock the two hands of the clock are 20 minute spaces apart. We know that 5 minute spaces is equal to 30° .

Therefore 20 minute spaces implies 120° .

Also, we know that in 1 minute minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 15 minutes minute hand rotates 90° whereas hour hand rotates 7.5° . Hence the required angle is $(120 - 90 + 7.5) = 37.5^\circ$.

- 20.1; At 4 O'clock the two hands of the clock are 20 minute spaces apart. We know that 5 minute spaces is equal to 30° .

Therefore 20 minute spaces implies 120° .

Also, we know that in 1 minute, minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 30 minutes, minute hand rotates 180° whereas hour hand rotates 15° .

Hence, the required angle is

$$(180 - 20 - 15) = 45^\circ.$$

- 21.4; At 5 O'clock the two hands of the clock are 25 minute spaces apart. We know that 5 minute spaces is equal to 30° .

Therefore 25 minute spaces implies 150° .

Also, we know that in 1 minute minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 20 minutes minute hand rotates 120° whereas hour hand rotates 10° . Hence the required angle is

$$(150 - 120 + 10) = 40^\circ.$$

- 22.1; At 9 O'clock the two hands of the clock

are 45 minute spaces apart. We know that 5 minute spaces is equal to 30° . Therefore 45 minute spaces implies 270° .

Also, we know that in 1 minute minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 32 minutes minute hand rotates $(32 \times 6) = 192^\circ$ whereas hour hand rotates 16° . Hence the required angle is

$$(270 - 192 + 16) = 94^\circ.$$

- 23.4; At 9 O'clock the two hands of the clock are 45 minute spaces apart. We know that 5 minute spaces is equal to 30° .

Therefore 45 minute spaces implies 270° .

Also, we know that in 1 minute, minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 17 minutes minute hand rotates $(17 \times 6) = 102^\circ$ whereas hour hand rotates 8.5° . Hence the required angle is $(270 - 102 + 8.5) = 176.5^\circ$.

- 24.1; At 7 O'clock the two hands of the clock are 35 minute spaces apart. We know that 5 minute spaces is equal to 30° .

Therefore 35 minute spaces implies 210° .

Also, we know that in 1 minute minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 38 minutes minute hand rotates $(38 \times 6) = 228^\circ$ whereas hour hand rotates 19° . Hence the required angle is

$$(210 - 228 + 19) = 1^\circ.$$

- 25.1; At 12 O'clock the two hands of the clock are 0 minute spaces apart. Also, we know that in 1 minute minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 48 minutes minute hand rotates $(48 \times 6) = 288^\circ$ whereas hour hand rotates 24° . Hence the required angle is $(288 - 24) = 264^\circ$.

- 26.1; At 11 O'clock the two hands of the clock are 5 minute spaces apart. We know that 5 minute spaces is equal to 30° . Also, we know that in 1 minute minute hand rotates by 6° whereas hour hand rotates by 0.5° . Therefore after 56 minutes minute hand rotates $(56 \times 6) = 336^\circ$ whereas hour hand rotates 28° . Hence, the required angle is $(30 + 336 - 28) = 338^\circ$. But there is no such choices. Now look for the angle $(360 - 338) = 22^\circ$.

- 27.3; The hands of a clock point opposite to each other 11 times in every 12 hours (because between 5 and 7, at 6 O'clock

only they point opposite to each other).

28. 4; In 12 hours, they are at right angles 22 times (because two positions of 3 O'clock and 9 O'clock are common). Therefore, in a day they are at right angles for 44 times.

29. 3; The hands coincide or are in opposite direction $(22 + 22)$ i.e. 44 times in a day.

30. 2; Time between the given interval = 180 hrs.

The watch gains

$$= 5 + 5 \frac{4}{5} = \frac{54}{5} \text{ min. in 180 hrs.}$$

$$\therefore 5 \text{ min. is gained in } \frac{180 \times 5}{54} \times 5 = 83 \text{ hrs.}$$

$$20 \text{ min.} = 3 \text{ days } 11 \text{ hrs } 20 \text{ min.}$$

$\therefore$ it was correct at 20 min. past 7 pm on wednesday.

31. 2; Time from 8 am on a day to 1 pm on the following day is 29 hrs.

Now, 24 hrs. 10 min. of this clock are the same as 24 hours of the correct clock.

$$\text{i.e. } \frac{145}{6} \text{ hrs. of this clock} = 24 \text{ hrs of correct clock.}$$

$$29 \text{ hrs. of this clock} = \left(\frac{24 \times 6}{145} \times 29 \right) \text{ hrs. of}$$

correct clock = 28 hrs. 48 min. of correct clock.

So, the correct time is 28 hrs. 48 min. after 8 am or 48 min. past 12.

32. 1; Time from 4 am to 3 am on 3rd day

$$= 24 \times 3 - 1 = 71 \text{ hrs.}$$

Now, 23 hr. 46 min. of this clock = 24 hrs. of correct clock.

$$\text{or, } \frac{23 \frac{46}{60}}{24} = \frac{1}{3} \text{ hrs of this clock}$$

$$= 2 \text{ hrs. of correct clock.}$$

$$\therefore 71 \text{ hrs. of this clock}$$

$$= \frac{24 \times 3 \times 71}{71} = 72 \text{ hrs. of correct clock.}$$

Therefore, the correct time

$$= 3 \text{ am} + (72 - 71) = 4 \text{ am}$$

33. 2; Time from Monday noon to 2 pm on following Monday = 7 days 2 hours = 170 hours

$$\text{The watch gains } \left(2 + 4 \frac{4}{5} \right)$$

$$\text{or, } \frac{34}{5} \text{ min. in 170 hours}$$

$$\therefore \text{ it will gain 2 min. in } \left(\frac{170 \times 5}{34} \right) \text{ hrs.}$$

$$= 50 \text{ hrs.} = 2 \text{ days } 2 \text{ hrs.}$$

So, the watch is correct 2 days 2 hours after Monday noon i.e. at 2 pm on Wednesday.

34. 2; Time from 7 am to quarter past 4 = 9 hours 15 min. = 555 min.

$$\text{Now, } \frac{37}{12} \text{ min. of this watch} = 3 \text{ min. of the correct watch.}$$

$$555 \text{ min. of this watch} = \left(\frac{3 \times 12}{37} \times 555 \right) \text{ min.}$$

$$= \left(\frac{3 \times 12}{37} \times \frac{555}{60} \right) \text{ hrs.} = 9 \text{ hrs. of the correct watch.}$$

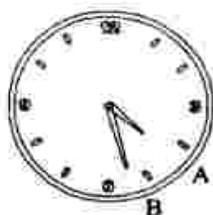
Correct time is 9 hours after 7 am i.e. 4 pm.

35. 4; The hands of a clock coincide 11 times in every 12 hours (because between 11 and 1, they coincide only once, at 12 O'clock). So, the hands coincide 22 times in a day.

36. 3; The hands will be equidistant from the figure 5,

- (i) when they are coincident between 4 and 5, and

- (ii) when they are in the position shown in the diagram.



For the 1st case the time would be

$$21 \frac{9}{11} \text{ min. past 4.}$$

In the second case suppose that the hour-hand is at A, and the minute-hand at B, so that A5 = 5B. Since the space

between 4 and 5 is equal to the space between 5 and 6,

$$4A = 6B$$

$$\text{Hence, } 12B + 4A = 12B + 6B = 30 \text{ min.}$$

That is, the two hands, between them have moved through a space of 30 minutes since 4 O'clock. But the minute hand moves 12 times as fast as the hour hand.

$$\text{Hence, } 12B = 30 \times \frac{12}{13} = 27 \frac{9}{13} \text{ min.}$$

$\therefore$ the required time is $27 \frac{9}{13}$ min. past 4.

37. 2; The minute-hand gains 60 minutes over the hour-hand in $\frac{60 \times 60}{55}$ or $65 \frac{5}{11}$ minutes. Therefore, the hands of a correct clock coincide every $65 \frac{5}{11}$ minutes.

But the hands of the clock mentioned in the question coincide every 65 minutes.

Hence in 65 minutes, the clock gains $\frac{5}{11}$ min.

$\therefore$ in 60×24 min, or 24 hours it gains

$$\frac{5}{11} \times \frac{1}{65} \times 60 \times 24 = 10 \frac{10}{143} \text{ min.}$$

38 - 41:

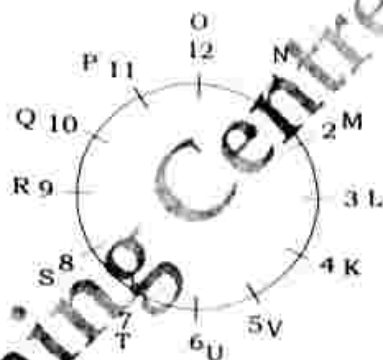
38. 2; Reflection time: $12 - 0.30 = 11:30$

39. 2; Reflection time: $12 - 6 = 6$ O'clock

40. 3; Reflection time: $12 - 1:40 = 10:20$

41. 3; Reflection time: $12 - 0:25 = 11:35$

42. 4;



In a number series, the number changes in accordance with certain specify rule/order. Read the series given in the questions carefully and find out which rule/order the series is following. Questions based on number series are mainly of two types:-

- Type A** - In this type of questions, a place is left blank or is replaced by a question mark.
- Type B** - In the this type of questions, a number which must come at a certain place is replaced by a wrong number. We have to decide which of the alternatives given will come in the place of the wrong number.

Type-A

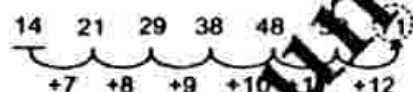
Some important rules of the questions asked in this type of number series:

I. Arithmetic series :- In arithmetic series the number in two continuous series increase or decrease in a definite order. For example-

Ex. 1. 14, 21, 29, 38, 48, 59, ?

(1) 69 (2) 79 (3) 81 (4) 91 (5) 71

Sol.

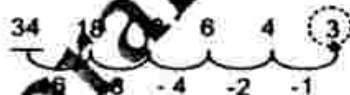


Ans. (5)

Ex. 2. 34, 18, 10, 6, ?

(1) 6 (2) 1 (3) 9 (4) 2 (5) 3

Sol.



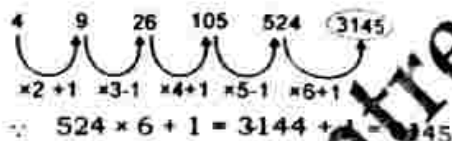
Ans. (5)

Geometric series: In geometries series, the next number is obtained by either multiplying or dividing the last one by a definite number. In this type of series there are certain addition/subtraction done along with some division or multiplication.

Ex. 1. 4, 9, 26, 105, 524, ?

(1) 1524 (2) 3032 (3) 3144
(4) 3145 (5) 3154

Sol.



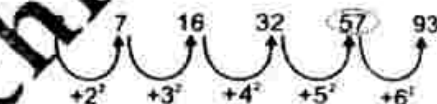
Ans. (4)

III. Series of squares and cubes: In the series of squares and cubes, the number in a series increases or decreases in squares or cubes and which are generally near to certain square or cube.

Ex. 1. 3, 7, 15, 31, 93

(1) 5 (2) 56 (3) 57 (4) 58 (5) 60

Sol.



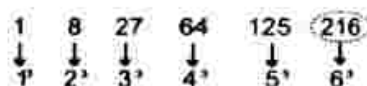
Ans. (3)

Ex. 1.

1, 8, 27, 64, 125, ?

(1) 216 (2) 150 (3) 169
(4) 196 (5) 225

Sol.



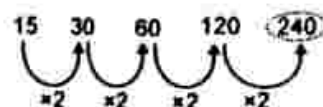
Ans. (1)

IV. Miscellaneous Number Series: In the type of miscellaneous number series, the series of numbers can be different. In this number series, numbers can increase/decrease by addition, subtraction, multiplication, division, arithmetic/geometric progression etc. For example-

Ex. 1. 15, 30, 60, 120, ?

(1) 250 (2) 245 (3) 240
(4) 250 (5) 260

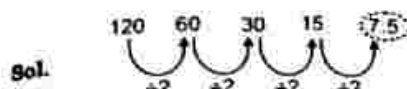
Sol.



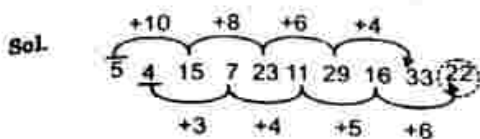
Ans. (3)

Ex. 2. 120, 60, 30, 15, ?

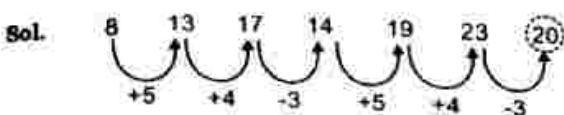
(1) 7 (2) 7.5 (3) 30 (4) 5.7 (5) 8.5



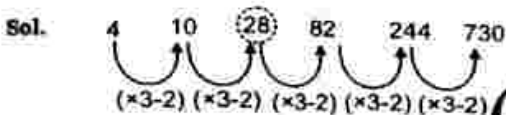
15 + 2 = 7.5
Ans. (2)
Ex. 3. 5, 4, 15, 7, 23, 11, 29, 16, 33, ?
 (1) 22 (2) 11 (3) 34 (4) 29 (5) 32



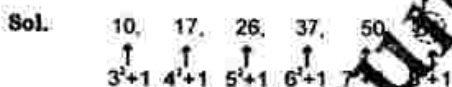
Ex. 4. 8, 13, 17, 14, 19, 23, ?
 (1) 22 (2) 24 (3) 25 (4) 20 (5) 18
Ans. (1)



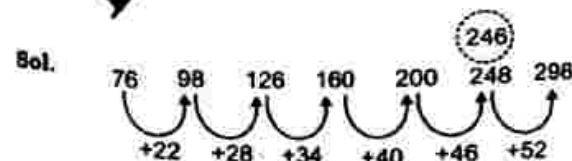
Ex. 5. 4, 10, ?, 82, 244, 730
 (1) 86 (2) 24 (3) 218 (4) 77 (5) 28
Ans. (4)



10, 17, 26, 37, 50, ?
 (1) 67 (2) 50 (3) 65 (4) 71 (5) 37
Ans. (5)



Some important examples of this type of questions:
Ex. 1. Which number is inappropriate in the series given below?
 75, 98, 126, 160, 200, 248, 298
 (1) 98 (2) 160 (3) 200
 (4) 248 (5) 98
Ans. (3)

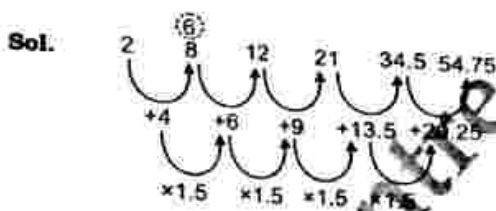


So, 246 will be at the place of 248.
Ans. (4)

Ex. 2. Which number is inappropriate in the

series given below?

2, 8, 12, 21, 34.5, 54.75
 (1) 2 (2) 8 (3) 34.5 (4) 21 (5) 54.75



So, 6 will be at the place of 8.

Ans. (2)

Exercise:

Type - A

- 2, 5, 7, 11, 2, 17
 (1) 12 (2) 13 (3) 14
 (4) 15 (5) None of these
- 1, 9, 17, 33, 49, 73, ?
 (1) 97 (2) 98 (3) 99
 (4) 100 (5) None of these
- 5, 9, 17, 29, 45, ?
 (1) 60 (2) 65 (3) 68
 (4) 70 (5) None of these
- 1, 6, 15, ?, 45, 66, 91
 (1) 25 (2) 26 (3) 27
 (4) 28 (5) None of these
- 3, 7, 15, 31, 63, ?
 (1) 92 (2) 115 (3) 127
 (4) 131 (5) None of these
- 1, 2, 3, 5, 8, ?
 (1) 9 (2) 11 (3) 13
 (4) 15 (5) None of these
- $33\frac{1}{3}$, 20, $14\frac{2}{7}$, ?, $9\frac{1}{11}$
 (1) 14 (2) $5\frac{5}{17}$ (3) $5\frac{5}{19}$
 (4) $11\frac{1}{19}$ (5) None of these
- 8, 15, 28, 53, ?
 (1) 106 (2) 98 (3) 100
 (4) 102 (5) None of these

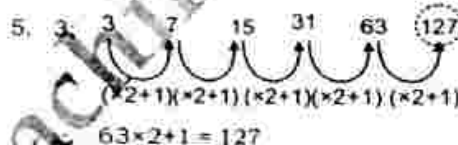
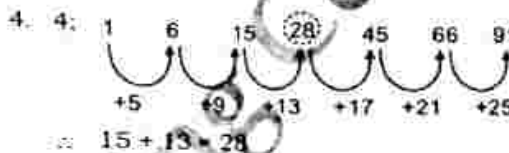
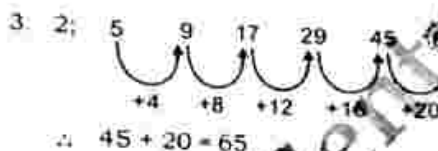
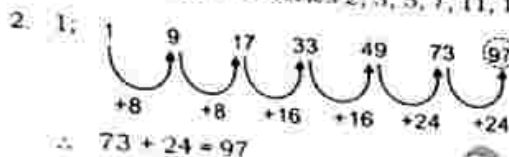
9. 1, 0, 5, 8, 17, 24, 37, ?
(1) 40 (2) 43 (3) 46
(4) 48 (5) None of these
10. 87, 90, 84, 88, 81, ?, ?
(1) 85, 93 (2) 86, 98 (3) 86, 78
(4) 86, 68 (5) None of these
11. 118, 182, 186, 222, ?
(1) 318 (2) 266 (3) 258
(4) 226 (5) None of these
12. 3, 7, 23, 95, ?
(1) 575 (2) 479 (3) 128
(4) 62 (5) None of these
13. 3, 28, 4, 65, 5, 126, 6, ?
(1) 215 (2) 216 (3) 217
(4) 218 (5) None of these
14. 3691, 6931, 9361, 3691, ?
(1) 1369 (2) 6931 (3) 1963
(4) 3961 (5) None of these
15. 81, 192, 375, ?, 1029
(1) 684 (2) 486 (3) 648
(4) 468 (5) None of these
16. 1, 2, 6, 33, 49, 174, 210?
(1) 553 (2) 259 (3) 426
(4) 274 (5) None of these
17. 1, 5, 11, 49, 239, ?
(1) 429 (2) 956 (3) 1441
(4) 1427 (5) None of these
18. 1, 4, 15, 64, 325, ?
(1) 1630 (2) 275 (3) 1956
(4) 1950 (5) None of these
19. 1, 16, 44, 95, 20, ?
(1) 414 (2) 418 (3) 408
(4) 416 (5) None of these
20. 3, 9, 31, ?, 651
(1) 27 (2) 127 (3) 129
(4) 109 (5) None of these
21. 1, 30, 136, 417, ?, 829
(1) 856 (2) 828 (3) 834
(4) 838 (5) None of these
22. 2, 4, 11, 37, ?, 771
(1) 115 (2) 148 (3) 152
(4) 118 (5) None of these
23. 2, 9, 30, 105, ?, 2195
(1) 432 (2) 426 (3) 440
(4) 436 (5) None of these
24. 2, 40, 180, 552, ?, 1112
(1) 1110 (2) 1010 (3) 1008
(4) 1080 (5) None of these
25. 3, 4, 12, 45, 196, ?
(1) 800 (2) 1004 (3) 996
(4) 955 (5) None of these
26. 3, 4, 12, 45, ?, 1005
(1) 152 (2) 198 (3) 144
(4) 192 (5) None of these
27. 3, 4, 16, 75, 364, ?
(1) 828 (2) 1293 (3) 1945
(4) 783 (5) None of these
28. 4, 2, 2, 3, 6, ?
(1) 2 (2) 15 (3) 6
(4) 3 (5) None of these
29. 4, 6, ?, 30, 90, 315
(1) 9 (2) 12 (3) 15
(4) 8 (5) None of these
30. 5, ?, 4, 7.5, 17, 45
(1) 3.5 (2) 3 (3) 2.5
(4) 2 (5) None of these
31. 6, 9, 18, 45, ?
(1) 135 (2) 99 (3) 115
(4) 138 (5) None of these
32. 6, 9, 11.25, 22.50, 26.50, ?
(1) 44.50 (2) 66.25 (3) 70.25
(4) 45 (5) None of these
33. 7, 8, 18, 66, ?, 1938
(1) 928 (2) 686 (3) 430
(4) 324 (5) None of these
34. 10, 11, 18, 38, 97.5, 295.5, ?
(1) 796 (2) 1186 (3) 889.5
(4) 1037.75 (5) None of these
35. 14, 10, 28, 17, 49, ?
(1) 21 (2) 8 (3) 10
(4) 19 (5) None of these
36. 15, 30, ?, 40, 8, 48
(1) 10 (2) 20 (3) 20
(4) 10 (5) None of these

37. 64, 36, 22, 15, 7, 9.75
 (1) 11.75 (2) 12.5 (3) 11.5
 (4) 12.25 (5) None of these
38. 81, 41, 42, 64.5, 7, 330
 (1) 131 (2) 118.5 (3) 129
 (4) 105.5 (5) None of these
39. 114, 115, 107, 134, 70, ?
 (1) 140 (2) 35 (3) 195
 (4) 150 (5) None of these

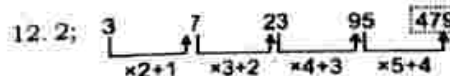
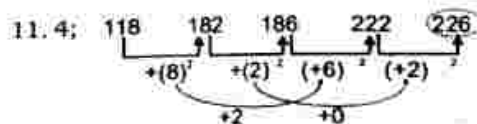
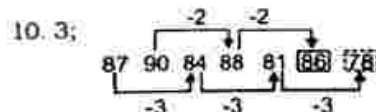
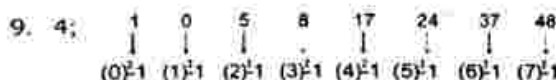
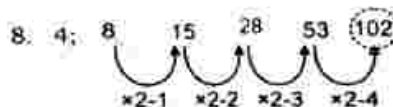
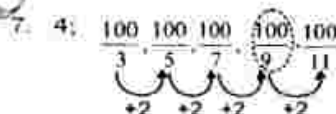
Type - B

40. 2807, 1400, 697, 347, 171, 84, 41, 20
 (1) 697 (2) 347 (3) 371
 (4) 84 (5) 41
41. 828, 412, 204, 100, 48, 24, 9
 (1) 100 (2) 48 (3) 24
 (4) 412 (5) 204
42. 496, 242, 116, 54, 24, 8, 4
 (1) 8 (2) 24 (3) 54
 (4) 116 (5) 24
43. 324, 192, 92, 46, 16, 4, 2
 (1) 4 (2) 16 (3) 46
 (4) 92 (5) 192
44. 24, 36, 81, 180, 540, 1890, 7560
 (1) 540 (2) 1890 (3) 36
 (4) 81 (5) 180
45. 16, 4, 2, 1.5, 1.75, 1.875
 (1) 1.875 (2) 1.75 (3) 1.5
 (4) 2 (5) 4
46. 7, 4, 6, 9, 20, 52.5, 105
 (1) 52.5 (2) 9 (3) 20
 (4) 4 (5) 6
47. 7, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400, 441, 484, 529, 576, 625, 676, 729, 784, 841, 900, 961, 1024, 1089, 1156, 1225, 1296, 1369, 1444, 1521, 1600, 1681, 1764, 1849, 1936, 2025, 2116, 2209, 2304, 2401, 2500, 2601, 2704, 2809, 2916, 3025, 3136, 3249, 3364, 3481, 3600, 3721, 3844, 3969, 4096, 4225, 4356, 4489, 4624, 4761, 4900, 5041, 5184, 5329, 5476, 5625, 5776, 5929, 6084, 6241, 6400, 6561, 6724, 6889, 7056, 7225, 7396, 7569, 7744, 7921, 8100, 8281, 8464, 8649, 8836, 9025, 9216, 9409, 9604, 9801, 10000
 (1) 25 (2) 68 (3) 41
 (4) 16 (5) 107
48. 6, 1, 45, 183, 925, 5556
 (1) 225 (2) 183 (3) 45
 (4) 14 (5) 6
49. 3, 2, 3, 6, 12, 37.5, 115.5
 (1) 12 (2) 2 (3) 6
 (4) 3 (5) 37.5
50. 3, 3, 4.5, 9, 27, 67.5, 236.25, 945
 (1) 236.25 (2) 4.5 (3) 9
 (4) 7 (5) 67.5

1. 2; Prime number series 2, 3, 5, 7, 11, 13, 17



6. 3; $1 + 2 = 3, 2 + 3 = 5, 5 + 3 = 8, 8 + 5 = 13$



13. 3; $3 \xrightarrow{3 \times 1} 28 \xrightarrow{4 \times 1} 85 \xrightarrow{5 \times 1} 126 \xrightarrow{6 \times 1} 217$

14. 2; $3691 \xrightarrow{1234} 6931 \xrightarrow{2314} 9361 \xrightarrow{3134} 3691 \xrightarrow{1234} 6931 \xrightarrow{2314}$

15. 3;

$81 \xrightarrow{(9)^2} 192 \xrightarrow{(14)^2} 375 \xrightarrow{(20)^2} 648 \xrightarrow{(27)^2} 1029 \xrightarrow{(35)^2} 1441$
 $+5 \quad +2 \quad +6 \quad +3 \quad +7 \quad +4 \quad +8 \quad +5$

16. 1;

$1 \xrightarrow{+1^2} 2 \xrightarrow{+2^2} 6 \xrightarrow{+3^2} 33 \xrightarrow{+4^2} 49 \xrightarrow{+5^2} 174 \xrightarrow{+6^2} 210 \xrightarrow{+7^2} 553$

17. 3; $1 \xrightarrow{\times 2+3} 5 \xrightarrow{\times 3+4} 11 \xrightarrow{\times 4+5} 49 \xrightarrow{\times 5+6} 239 \xrightarrow{\times 6+7} 1441$

18. 3; $1 \xrightarrow{\times 2+2} 4 \xrightarrow{\times 3+3} 15 \xrightarrow{\times 4+4} 64 \xrightarrow{\times 5+5} 325 \xrightarrow{\times 6+6} 1956$

19. 1; $1 \xrightarrow{+15} 16 \xrightarrow{+28} 44 \xrightarrow{+54} 98 \xrightarrow{+104} 204 \xrightarrow{+210} 414$
 $+13 \quad +26 \quad +51 \quad +104$
 $\times 2 \quad \times 2 \quad \times 2$

20. 3; $1 \xrightarrow{\times 1+2} 3 \xrightarrow{\times 2+3} 9 \xrightarrow{\times 3+4} 31 \xrightarrow{\times 4+5} 129 \xrightarrow{\times 5+6} 651$

21. 4; $1 \xrightarrow{\times 5+5^2} 30 \xrightarrow{\times 4+4^2} 136 \xrightarrow{\times 3+3^2} 417 \xrightarrow{\times 2+2^2} 838 \xrightarrow{\times 1+1^2} 839$

22. 5; $2 \xrightarrow{\times 1+2} 4 \xrightarrow{\times 2+3} 11 \xrightarrow{\times 3+4} 37 \xrightarrow{\times 4+5} 153 \xrightarrow{\times 5+6} 771$

23. 4; $2 \xrightarrow{\times 1+7} 9 \xrightarrow{\times 2+12} 30 \xrightarrow{\times 3+15} 105 \xrightarrow{\times 4+16} 436 \xrightarrow{\times 5+15} 2195$
 $+5 \quad +3 \quad +1 \quad -1$
 $-2 \quad -2 \quad -2$

24. 1; $2 \xrightarrow{\times 5+30} 40 \xrightarrow{\times 4+20} 180 \xrightarrow{\times 3+2} 552 \xrightarrow{\times 2+6} 1110 \xrightarrow{\times 1+2} 1112$
 $-10 \quad -8 \quad -6 \quad -4$

25. 5; $3 \xrightarrow{\times 1+1^2} 4 \xrightarrow{\times 2+2^2} 12 \xrightarrow{\times 3+3^2} 45 \xrightarrow{\times 4+4^2} 196 \xrightarrow{\times 5+5^2} 1005$

26. 3; $3 \xrightarrow{\times 1+1^2} 4 \xrightarrow{\times 2+2^2} 12 \xrightarrow{\times 3+3^2} 45 \xrightarrow{\times 4+4^2} 196 \xrightarrow{\times 5+5^2} 1005$

27. 3; $3 \xrightarrow{\times 1+1^2} 4 \xrightarrow{\times 2+2^2} 16 \xrightarrow{\times 3+3^2} 75 \xrightarrow{\times 4+4^2} 364 \xrightarrow{\times 5+5^2} 1945$

28. 2; $4 \xrightarrow{\times \frac{1}{2}} 2 \xrightarrow{\times 1} 2 \xrightarrow{\times 1.5} 3 \xrightarrow{\times 2} 6 \xrightarrow{\times 2.5} 15$

29. 2; $4 \xrightarrow{\times 1.5} 6 \xrightarrow{\times 2} 12 \xrightarrow{\times 2.5} 30 \xrightarrow{\times 3} 90 \xrightarrow{\times 3.5} 315$

30. 2; $5 \xrightarrow{\times 0.5+0.5} 3 \xrightarrow{\times 1+1} 4 \xrightarrow{\times 1.5+1.5} 7.5 \xrightarrow{\times 2+2} 17 \xrightarrow{\times 2.5+2.5} 45$

31. 1; $6 \xrightarrow{\times 1.5} 9 \xrightarrow{\times 2} 18 \xrightarrow{\times 2.5} 45 \xrightarrow{\times 3} 135$

32. 2; $6 \xrightarrow{\times 1.5} 9 \xrightarrow{\times (1.5)^2} 11.25 \xrightarrow{\times 2} 22.50 \xrightarrow{+(2)^2} 26.50 \xrightarrow{\times 2.5} 66.25$

33.4; 7 8 18 66 (324) 1938
 $\times 2-6$ $\times 3-6$ $\times 4-6$ $\times 5-6$ $\times 6-6$

34.4; 10 11 18 38 97.5 295.5 (1037.75)
 $\times 1+1$ $\times 1.5+1.5$ $\times 2+2$ $\times 2.5+2.5$ $\times 3+3$ $\times 3.5+3.5$

35.5; 14 10 28 17 49 (27.5)
 $\times 5+3$ $\times 3-2$ $\times 5+3$ $\times 3-2$ $\times 5+3$

36.1; 15 30 (10) 40 8 48
 $\times 2$ $\times \frac{1}{3}$ $\times 4$ $\times \frac{1}{5}$ $\times 6$

37.3; 64 36 22 15 (11.5) 9.75
 -28 -14 -7 -3.5 -1.75

38.1; 81 41 42 64.5 (111) 330
 $\times 0.5+0.5$ $\times 1+1$ $\times 1.5+1.5$ $\times 2+2$ $\times 2.5+2.5$

39.1
 40.2;

348
 2807 1400 697 (347) 171 89 41 20
 $-7+2$ $-6+2$ $-5+2$ $-4+2$ $-3+2$ $-2+2$ $-1+2$

22
 41.3; 828 412 204 100 48 (24) 0
 -4×0.5 -4×0.5 -4×0.5 -4×0.5 -4×0.5 -4×0.5

42.1

1.5
 45.2; 16 4 2 1.5 (1.75) 1.875
 $\times 0.25$ $\times 0.5$ $\times 0.75$ $\times 1$ $\times 1.25$
 46.5 47.2 48.2 49.1 50.4

In this chapter, in each question some numbers/alphabets are given in one/more than one figures/matrix. The numbers/alphabets are arranged in a proper order. In a part of the figure a number is not given and it is replaced by a question mark (?). You have to evaluate the questions and find out which alphabet/numbers will come in place of question mark.

Some of the questions with their detailed analyses have been explained below.

For eg:

- (1) Find the missing number in the figure given below and choose the correct alternative from the options given.

7	4	9
14	8	?
28	16	36
56	32	32

- (1) 81 (2) 27 (3) 16 (4) 18

Sol. 4; In 1st column

$$7 \times 2 = 14$$

$$14 \times 2 = 28$$

$$28 \times 2 = 56$$

In 2nd column

$$4 \times 2 = 8$$

$$8 \times 2 = 16$$

$$16 \times 2 = 32$$

In the same way in 3rd column

$$9 \times 2 = 18$$

$$18 \times 2 = 36$$

$$36 \times 2 = 72$$

Ans. (4).

- (2) Which number will come in the place of question mark in the figure given below?

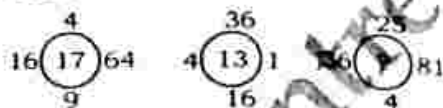


Figure A Figure B Figure C

- (1) 20 (2) 22 (3) 26 (4) 27

Sol. 2; In the figure given above the number given in the circle is the sum of the square roots of the numbers encircling the circle.

Figure in A,

$$\sqrt{4} + \sqrt{64} + \sqrt{9} + \sqrt{16} = 2 + 8 + 3 + 4 = 17$$

Figure in B,

$$\sqrt{36} + \sqrt{4} + \sqrt{16} + \sqrt{1} = 6 + 2 + 4 + 1 = 13$$

In the same type figure in C,

$$= \sqrt{25} + \sqrt{36} + \sqrt{4} + \sqrt{81} = 5 + 6 + 2 + 9 = 22$$

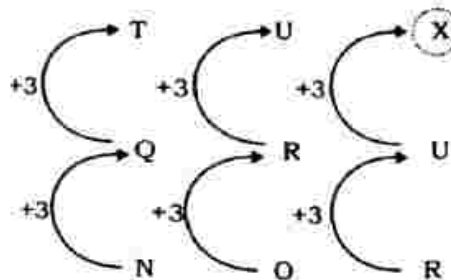
Ans. (2).

- (3) Find the missing alphabet

T	U	?
Q	R	U
N	O	R

- (1) L (2) O (3) I (4) X

Sol. 4;



Ans. (4).

Exercise:

Directions (1 - 43): Find out missing number/letter/number and letter from the following given options/figures.

1.

17	5
11	

15	21
	18

21	17
	?

(1) 14 (2) 18 (3) 20 (4) 19

2.

26	A	19
18	15	B
C	7	3

What will come in place of A, B and C respectively?

- (1) 23, 10, 11 (2) 11, 23, 20
(3) 23, 101, 10 (4) 10, 11, 23
3.

125	192	56
25	?	28
5	12	14
1	3	7

(1) 64 (2) 56 (3) 48 (4) 40

4.

?	9	4	1
4	3	2	1
?	6	4	2

(1) 16, 8 (2) 49, 7 (3) 36, 4 (4) 25, 5

5.

?	9
27	18

(1) 40 (2) 36 (3) 39 (4) 44

6.

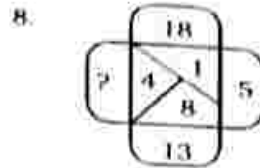
7	9	2
5	?	2
4	3	2

(1) 10 (2) 11 (3) 12 (4) 13

7.

348	7	18
172	?	40

(1) 72 (2) 84 (3) 68 (4) 66



- (1) 10 (2) 11 (3) 17 (4) 23
9.

1	9	4	16	9	25	16	36
25	36	49	64	81	100	121	144

(1) 47 (2) 64 (3) 50 (4) 57

10.

12	8	16	6	25	20
80	220	?			

(1) 225 (2) 110 (3) 241 (4) 425

11.

93	27	79	08
63	37		
3	?		

- (1) 25 (2) 36 (3) 38 (4) 34
12.

56	22	34	14
15	31	21	?
18		16	

(1) 25 (2) 52 (3) 12 (4) 48

13.

3	6
5	12
4	?
2	10

(1) 50 (2) 60 (3) 70 (4) 16
14.

15	36	6	6	21	7	50	?	10
	4			5			10	

(1) 140 (2) 220 (3) 500 (4) 320

15.

14	19	12
13	15	17
18	11	?

(1) 9 (2) 16 (3) 15 (4) 14

16.

9	8	7
6	7	8
5	4	6
260	214	?

 (1) 191 (2) 326 (3) 277 (4) 336
17.

5	6	3
25	42	21
21	100	20
26	107	?

 (1) 72 (2) 26 (3) 27 (4) 73
18.

0	-1	-2
1	0	-1
2	?	10

 (1) 6 (2) -2 (3) -2 (4) 4
19.

5	5	2
8	3	10
2	4	1
160	120	?

 (1) 40 (2) 12 (3) 13 (4) 20
20.

?	19	47
21	22	40
1	20	50
20	23	46

 (1) 5 (2) 4 (3) 3 (4) 2
21.

18	24	32
12	14	16
3	?	4
3	7	12

 (1) 2 (2) 3 (3) 4 (4) 5
22.

15	4
60	19

 (1) 117 (2) 40 (3) 61 (4) 81
23.

15	36	9
16	?	13

 (1) 7 (2) 19 (3) 20 (4) 22
24.

3	39	3
6	?	4

 (1) 47 (2) 45 (3) 37 (4) 35
25.

17	14	50
8	7	6
3	?	2
50	30	31

 (1) 3 (2) 4 (3) 5 (4) 6
26.

7	9	21
4	81	36
9	?	45

 (1) 18 (2) 25 (3) 36 (4) 58
27.

R
4
H 1 2 3 A N T
5
U
B
T

 (1) EBE, UBH (2) ILI, ELL (3) ONI, ONT (4) YDR, EDO
28.

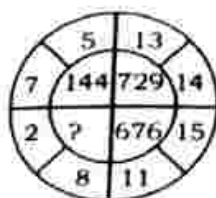
1
2 5 4
3

 (1) 20 (2) 40 (3) 60 (4) 80
29.

6	5		
4	100	144	7
4	36	?	9
2	11		

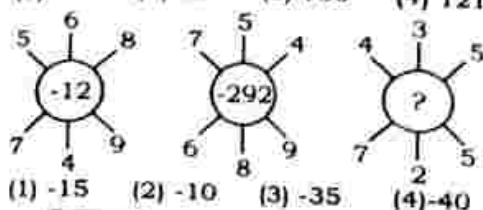
 (1) 500 (2) 108 (3) 400 (4) 112

30.



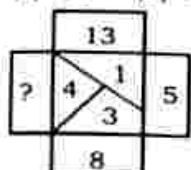
- (1) 64 (2) 81 (3) 100 (4) 121

31.



- (1) -15 (2) -10 (3) -35 (4) -40

32.



- (1) 10 (2) 11 (3) 12 (4) 13

33.



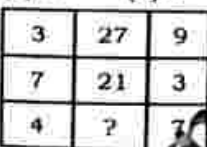
- (1) 18 (2) 22 (3) 49 (4) 35

34.



- (1) 5 (2) 8 (3) 36 (4) 14

35.



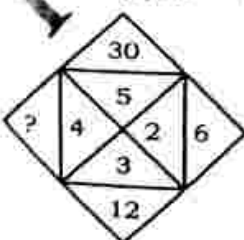
- (1) 11 (2) 28 (3) 35 (4) 48

36.



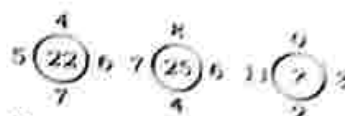
- (1) 19 (2) 22 (3) 26 (4) 28

37.



- (1) 10 (2) 20 (3) 12 (4) 14

38.



- (1) 9 (2) 2 (3) 11 (4) 16

39.



- (1) 4 (2) 7 (3) 25 (4) 512

40.



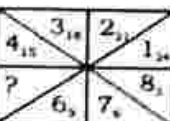
- (1) 3 (2) 8 (3) 12 (4) 16

41.



- (1) 31 (2) 45 (3) 33 (4) 35

42.



- (1) 5 (2) 5 (3) 6 (4) 8

43.



- (1) 9 (2) 15 (3) 13 (4) 11

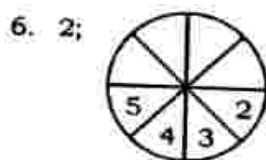
Answers with Explanation:

1. 4; $17 + 5 = 22 + 2 = 11$
 $15 + 21 = 36 \div 2 = 18$
 $21 + 17 = 38 \div 2 = 19$

2. 3; $26 - 3 = 23$, $19 - 4 = 15$, $11 - 4 = 7$, $10 - 3 = 7$

3. 3; In column I
 $1 \times 5 = 5 \times 5 = 25 \times 5 = 125$
 In column III
 $7 \times 2 = 14 \times 2 = 28 \times 2 = 56$
 So, In Column II
 $3 \times 4 = 12 \times 4 = 48 \times 4 = 192$

4. 1; In I row
 Digits - $1^2, 2^2, 3^2, 4^2$
 In row II
 Digit 1, 2, 3, 4
 In row III
 Digits $2 + 2 = 4, 4 + 2 = 6, 6 + 2 = 8$
 5. 2; $9 + 3^2 = 9 + 9 = 18$
 $18 + 3^2 = 18 + 9 = 27$
 $27 + 3^2 = 27 + 9 = 36$



In half part of circle digit are increasing in ascending order i.e. 2, 3, 4, 5



In the half part of circle digits are increasing in ascending order in odd number if, 5, 7, 9, 11

7. 2; $7 \times 2 + 4 = 18$
 $= 18 \times 2 + 4 = 40$
 $= 40 \times 2 + 4 = 84$
 $= 84 \times 2 + 4 = 172$
 $= 172 \times 2 + 4 = 348$

8. 3; $5 + 8 = 13$
 $= 13 + 4 = 17$
 $= 17 + 1 = 18$

9. missing number is = 17

9. 2; In figure I
 $1^2 = 1$
 $3^2 = 9$
 $5^2 = 25$
 In figure II
 $2^2 = 4$
 $4^2 = 16$
 $6^2 = 36$

In figure III

$$3^2 = 9$$

$$5^2 = 25$$

$$7^2 = 49$$

So, in figure IV

$$4^2 = 16$$

$$6^2 = 36$$

$$8^2 = 64$$

10. 1; In figure I
 $12^2 - 8^2$
 $= 144 - 64 = 80$

In figure II

$$16^2 - 6^2$$

$$= 256 - 36 = 220$$

In figure III

$$25^2 - 20^2$$

$$= 625 - 400$$

$$= 225$$

11. 4; In figure I
 $93 - (27 + 63) = 3$

In figure II

$$79 - (08 + 37)$$

$$= 79 - 45 = 34$$

12. 1; In figure I

$$(56 + 15) - (22 + 18)$$

$$= 71 - 40 = 31$$

In figure II

$$(34 + 21) - (14 + 16)$$

$$= 55 - 30 = 25$$

13. 2; In figure I
 $(3 \times 4 \times 2 \times 5) \div 12$
 $= 120 \div 12 = 10$

In figure II

$$(6 \times 2 \times 10 \times 5) \div x = 10$$

$$600 \div x = 10$$

$$x = 600 \div 10$$

$$x = 60$$

14. 3; In figure I
 $(15 \times 6 \times 4) \div 36$
 $= 360 \div 36 = 10$

In figure II

$$(6 \times 7 \times 5) \div 21$$

$$= 210 \div 21 = 10$$

In figure III

$$(50 \times 10 \times 10) \div x = 10$$

$$5000 \div x = 10$$

$$x = 5000 \div 10$$

$$x = 500$$

15. 2; In row I
 $14 + 19 + 12 = 45$
 In row II
 $13 + 15 + 17 = 45$
 So, In row III
 $18 + 11 + x = 45$
 $29 + x = 45$
 $x = 45 - 29$
 $x = 16$
16. 2; In column I
 $9 \times 6 \times 5 = 270 - 10 = 260$
 In column II
 $8 \times 7 \times 4 = 224 - 10 = 214$
 So, in column III original number is
 $7 \times 8 \times 6 = 336 - 10 = 326$
17. 3; In column I
 $(25 \div 5) + 21 = 26$
 In column II
 $(42 \div 6) + 100 = 107$
 In column III
 $(21 \div 3) + 20$
 $= 7 + 20 = 27$
18. 1; In row I
 $\frac{0 + (-2)}{2} = -1$
 In row II
 $\frac{1 + (-3)}{2} = 0$
 $\therefore$ Missing Number is $\frac{2 + 1}{2}$
19. 1; In column I
 $(5 \times 8 \times 2) \times 2 = 160$
 In column II
 $(5 \times 3 \times 4) \times 2 = 120$
 So, Missing Number = $(2 \times 10 \times 1) \times 2 = 40$
20. 4; In Column II = $(22 + 20) - 23$
 $42 - 23 = 19$
 In Column III = $(40 + 50) - 43$
 $90 - 43 = 47$
 Then missing number = $(21 + 1) - 20 = 2$
21. 2; In column I = $18 - 12 - 3 = 3$
 In column III = $32 - 16 - 4 = 12$
 Then, in column II = $24 - 14 - x = 7$
 $10 - x = 7$
 $x = 10 - 7$
 $x = 3$
 So, missing no. is 3
22. 2; In figure I = $15 \times 4 = 60$, $15 + 4 = 19$
 In figure II = $3 \times 8 = 24$, $3 + 8 = 11$
 Then missing number is $10 \times 4 = 40$
23. 1; In figure I = $(15 - 9) \times (22 - 16)$
 $= 6 \times 6 = 36$
 Then missing number = $(21 - 13) \times (15 - x) = 64$
 $= 8(15 - x) = 64$
 $= 120 - 8x = 64$
 $8x = 56$
 $x = 7$
24. 3; In figure I $(3 \times 2) + (6 \times 5) = 39$
 Then missing number = $(3 \times 4) + (5 \times 5) = 37$
25. 3; In Column I = $(17 \times 3) + 8 = 59$
 In Column II = $(14 \times 3) + 7 = 49$
 Then missing number = $5 \times x + 6 = 31$
 $5x + 6 = 31$
 $5x = 25$
 $x = 5$
26. 2; First Row $\rightarrow 21 \div 7 = 3$ and $3^2 = 9$
 Second Row $\rightarrow 36 \div 4 = 9$ and $9^2 = 81$
 Then missing number in third row = $45 \div 9 = 5$ and $5^2 = 25$
27. 4; In these question
 in row $\rightarrow$ YDR
 in column $\rightarrow$ EDO
 Then complete word is REDOUBT and HYDRANT.
28. 3; We have $\rightarrow (2 \times 4) - (1 \times 3) = 8 - 3 = 5$
 In the same way $(8 \times 10) - (4 \times 5) = 80 - 20 = 60$
29. 3; The arrangement is $4 + 6 = 10$,
 $10^2 = 100$
 $5 + 7 = 12$, $12^2 = 144$
 $4 + 2 = 6$, $6^2 = 36$
 In the same way $9 + 11 = 20$; $20^2 = 400$
 Then missing number is 400.
30. 3; The arrangement is $7 + 5 = 12$; $12^2 = 144$
 $13 + 14 = 27$; $27^2 = 729$
 $15 + 11 = 26$; $26^2 = 676$
 In the same way $8 + 2 = 10$; $10^2 = 100$
 Then missing number is 100.
31. 2; In figure I
 $(5 \times 6 \times 8) - (7 \times 4 \times 9)$
 $= 240 - 252 = -12$ (middle number)
 In figure II
 $(7 \times 5 \times 4) - (6 \times 8 \times 9)$
 $= 140 - 432 = -292$ (middle number)

In figure III

$$(4 \times 3 \times 5) - (7 \times 2 \times 5)$$

$$= 60 - 70 = -10 \text{ (middle number)}$$

So, missing number is -10.

32. 3; Sum of number in triangle and square
= situated in next square

$$5 + 3 = 8, \quad 8 + 4 = 12, \quad 12 + 1 = 13$$

Then missing number is 12

33. 3; In ring I, $3 + 5 + 7 + 1^3 = 16$

$$\text{In ring II, } 3 + 5 + 8 + 2^3 = 24$$

Then,

$$\text{Third ring } - 7 + 4 + 11 + 3^3 = 49$$

34. 3; Numbers are diagonally multiplied with 4.

$$1 \times 4 = 4, \quad 6 \times 4 = 24, \quad 2 \times 4 = 8$$

$$\text{So, } 9 \times 4 = 36$$

Then missing number is 36

35. 2; Middle number in first row = $3 \times 9 = 27$

Middle number is second row

$$= 7 \times 3 = 21$$

$$\text{Then, Middle number in third row} = 4 \times 7$$

$$= 28$$

Then missing no. is 28

36. 3; $17 \xrightarrow{+1} 18 \xrightarrow{+1} 19$

$$\text{So, } 20 \xrightarrow{+2} 23 \xrightarrow{+3} 26$$

Then missing number is 26.

37. 2; The arrangement is

$$2 \times 3 = 6$$

$$3 \times 4 = 12$$

$$4 \times 5 = 20$$

$$5 \times 6 = 30$$

Then, missing number is 42

38. 4; Number in the circle

$$= (5 + 6) + (4 + 7) = 22$$

Number in the circle

$$= (7 + 6) + (8 + 4) = 25$$

Number in the circle

$$= (11 + 3) + (2 + 0) = 16$$

39. 4; In order $3^3 = 27, 4^3 = 64,$

$$5^3 = 125, 6^3 = 216$$

$$7^3 = 343$$

$$\text{Then, } 8^3 = 512$$

Then, missing number is 512.

40. 2; Column I

$$= (6 \times 5 \times 4) \times 2$$

$$= 120 \times 2 = 240$$

Column II

$$= (6 \times 7 \times 3) \times 2$$

$$= 126 \times 2 = 252$$

Then, Column III

$$= (8 \times 5 \times x) \times 2 = 640$$

$$= 40x \times 2 = 640$$

$$= 40x = 640 \div 2$$

$$= 40x = 320$$

$$x = 8$$

Then, missing is 8

41. 2; In order,

$$\text{In row I, } 9 \xrightarrow{+1} 10 \xrightarrow{+2} 12$$

$$\text{In row II, } 12 \xrightarrow{+4} 16 \xrightarrow{+8} 24$$

$$\text{Then, In row III, } 24 \xrightarrow{+7} 31 \xrightarrow{+14} 45$$

Then, missing no is 45.

42. 2; Clearly, moving anticlockwise.

$$1 \xrightarrow{+1} 2 \xrightarrow{+1} 3 \xrightarrow{+1} 4 \xrightarrow{+1} 5 \xrightarrow{+1} 6 \xrightarrow{+1} 7 \xrightarrow{+1} 8$$

Moving Clockwise

$$3 \xrightarrow{+3} 6 \xrightarrow{+3} 9 \xrightarrow{+3} 12 \xrightarrow{+3} 15 \xrightarrow{+3} 18 \xrightarrow{+3} 21$$

Then, missing number is 5₁₂.

43. 2; The Sum of all numbers of each row is = 34

Then, the missing number is

$$= 8 + 11 + x = 34$$

$$\text{or, } 19 + x = 34$$

$$\text{or, } x = 34 - 19$$

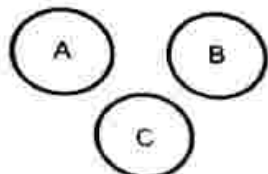
$$\text{or, } x = 15$$

VENN DIAGRAM

Venn diagram is named after a British Mathematician, **John Venn** who developed the idea of using diagrams to represent sets.

Here are a few different types of Venn diagrams with their implications. There are different ways of representing our problems by Venn diagram. In all representations only circles are used for simplicity. Different cases are shown below-

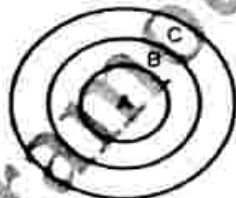
1. If the items given in the problem belong to three different groups, the Venn diagram representing it would be as shown below-



Ex. Solid (A), Liquid (B), Gas (C)

These three items bear no relationship to one-another. So they are represented by 3 disjoint circles.

2. If one item belongs to the class of the second and the second belongs to the class of third, then the representation is in the form of three concentric circles, as shown below.



Ex. Drinking Water (A), Water (B), Liquid (C).

Clearly, drinking water is a part of water and water is a part of liquid. So, the Venn diagram would be as shown in the adjoining figure with circle A representing drinking water, circle B representing water and circle C representing liquid.

3. If two separate items belong to the class of the third, they are represented by two disjoint circles inside a bigger circle as shown. Note that the two items should be different i.e. they shouldn't be related to

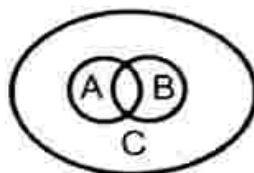
each other in any way, however they both should be the part of the third item.



Ex. Desk (A), Chair (B), Furniture (C)

Clearly, table and chair are separate items but both are items of furniture. So, they would be represented as shown in the adjoining figure with circle A Desk, circle B representing Chair and circle C representing Furniture.

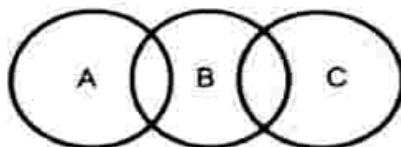
4. If two items belong to the class of the third items in such a way that some items of each of these two groups are common in relationship, then they are represented by two intersecting circles enclosed within the bigger circle.



Ex. Females (C), Mothers (A), Sisters (B).

Clearly, some mothers may be sisters and vice-versa. So, mothers and sisters would be represented by two intersecting circles. Also mothers and sisters are females. So, in the diagrammatic representation mothers are represented by circle A, circle B represents sisters and circle C represents females.

5. If two items are partly related to the third, and are themselves independent of each other, they are represented by three intersecting circles in a line.

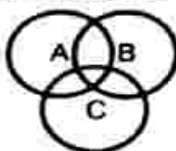


Ex. Cats (A), Pets (B), Dogs (C).

Clearly, some dogs and some cats are pets.

But all the pets are not dogs or cats. Also dogs and cats are not related to each other. So the given items would be represented as shown above with circle A representing Cats, circle B representing Pets and circle C representing Dogs.

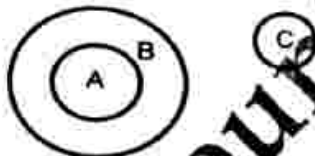
6. If the three items are partly related to one-another, they are represented as shown in the adjoining figure.



Ex. Males (A), Government-Employees (B), Educated Persons (C).

Clearly, some males may be government employees and some may be educated. Similarly, some government employees may be males as well as educated. Also, some educated persons may be males and government employees. So, the given items may be represented as shown above with three intersecting circles denoting the three classes.

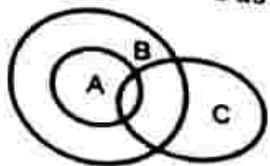
7. If one item belongs to the class of second while third item is entirely different from the other two, then they may be represented by the adjoining diagram.



Ex. Teachers (A), Human Beings (B), Dogs (C).

Clearly, all teachers are human beings. This would be represented by two concentric circles. But the class of dogs is entirely different from these two. Thus, these items would be represented as shown above with circle A representing Teachers, circle B representing Human Beings and circle C representing Dogs.

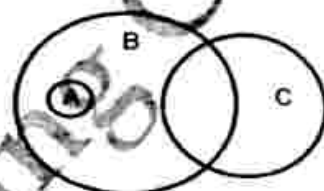
8. If one item belongs to the class of second and the third item is partly related to these two, they are represented as shown below.



Ex. Males (B), Fathers (A), Doctors (C).

Clearly, all fathers are males. This would be represented by two concentric circles. But, some males and some fathers can be doctors. So, the circle representing doctors would intersect each of the two concentric circles. Thus, the diagram becomes as shown with circle A representing Fathers, circle B representing Males and circle C representing Doctors.

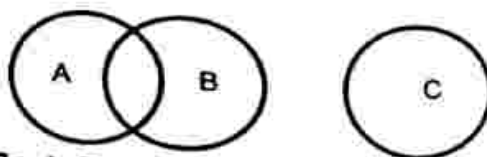
9. If one item belongs to the class of second and the third item is partly related to the second, they are represented as shown below.



Ex. Females (B), Mothers (A), Children (C).

Clearly, all mothers are females. This would be represented by two concentric circles. But, some Females are Children. But, Children cannot be Mothers. Thus, the diagram becomes as shown with circle A representing Mothers, circle B representing Females and circle C representing Children.

10. If two items are partly related to each other and the third item is entirely different from the two, they are represented as shown below.

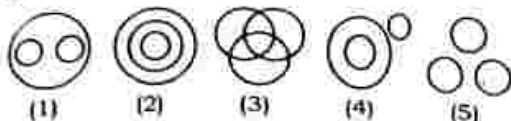


Ex. Govt. Employees (A), Doctors (B), Children (C)

Clearly, some Govt. employees can be doctor and vice versa. This would be represented by two intersecting circles. But the class of children would be entirely different from these two. Thus the venn diagram would be as shown with Circle A representing Govt. employees, Circle B representing doctors and circle C representing Children.

Let us take some questions in order to understand thoroughly.

Directions (1 - 6) : There are five diagrams (1), (2), (3), (4) and (5) given below. In the following questions, three objects/subjects are given. Choose the diagram that best illustrates the relationship between them.

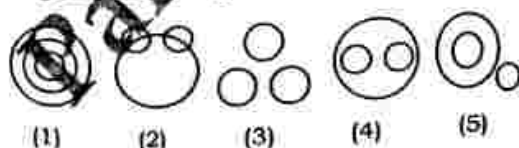


1. Furniture, Table, Books
2. Lakes, Rain, Water
3. Fathers, Brothers, Husbands
4. T-shirts, Trousers, Skirts
5. Buses, Cars, Vehicles
6. Lemons, Citrus fruits, Chocolates

Answers and explanations

1. 4: 'Table' belongs to the group 'Furniture', while 'Books' do not, Hence (4).
2. 1: 'Lakes' and 'Rain' both belong to the group 'Water', Hence (1).
3. 3: Some fathers are brothers. Some brothers are husbands. Also, some husbands are fathers. Hence, option diagram (3).
4. 5: All the three are separate items of clothing. Hence (5).
5. 1: 'Buses' and 'Cars' both belong to the group 'Vehicles'. Hence (1).
6. 4: 'Lemons' belongs to the group 'Citrus fruits', while 'Chocolates' is entirely different. Hence (4).

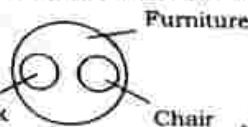
Directions (7 - 10): Each of these questions below contains three groups of things. You are to choose from the following five numbered diagrams, the diagram that depicts the correct relationship among the three groups of things in each question.



7. Tables, Chairs, Furniture
8. Tie, Shirt, Pant
9. Dogs, Pets, Cats
10. Brinjal, Meat, Vegetables

Answers and explanations

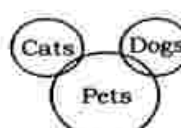
7. 4: Tables and Chairs are unrelated items. But, both are items of Furniture.



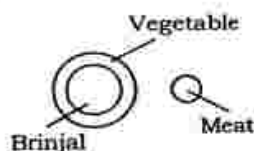
8. 3: Tie, shirt and Pant are separate items, entirely different from each other.



9. 2: Dogs and Cats are entirely different from each other. But, both are pet as well as animals.

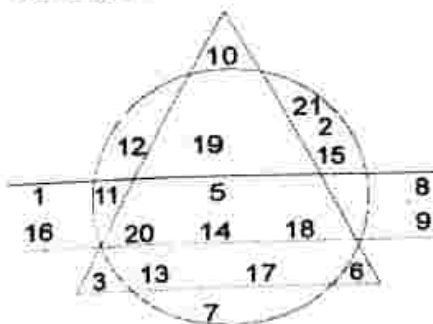


10. 5: Brinjal is a vegetable. But Meat is entirely different.



Exercise:

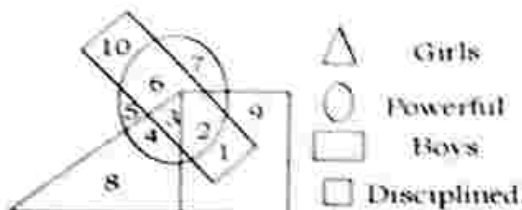
1. Study the figure formed by a circle, a rectangle and a triangle, which is shown in the following figure and answer the following questions.



From above which number (8) is comprised by all the figures?

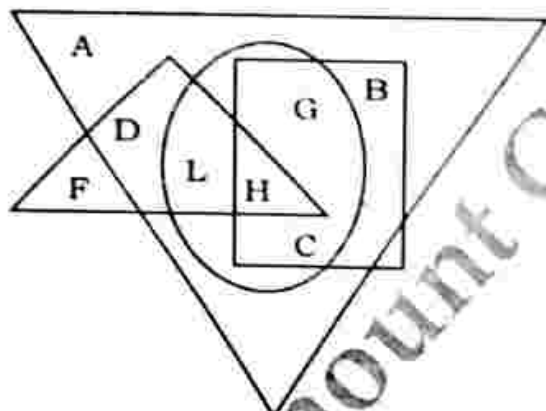
- (1) 19 (2) 13 (3) 15
(4) 20 (5) None of these

2. In the given figure which number 5 represents both powerful and disciplined boys?



- (1) 1 (2) 2 (3) 6
(4) 10 (5) None of these

Directions (3 - 7): These are based on the given figure. Study the following figure and answer the following questions:



1. Bigger triangle indicates artists.
2. Smaller triangle indicates scientists.
3. Rectangle indicates dancers.
4. Circle indicates doctors.
3. According to the figure which letter represents those artists who are doctors as well as dancers?
(1) A (2) G (3) D
(4) F (5) None of these

Which letters represent those artists who are neither scientists nor doctors?

- (1) A and B (2) A and C (3) B and G
(4) L and H (5) None of these

Which letters represent those artists who are doctors as well as dancers?

- (1) A and D (2) G and H (3) C and A
(4) C and D (5) None of these

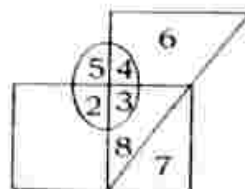
6. Which letter represents those artists who are neither doctors nor scientists and nor dancers?

- (1) D (2) F (3) A
(4) G (5) None of these

7. Which letter represents those scientists who are not artists?

- (1) B (2) D (3) L
(4) F (5) None of these

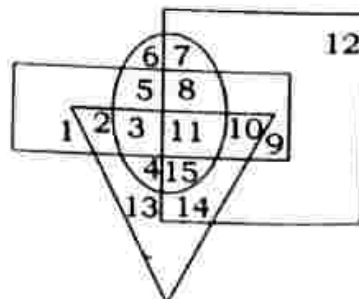
In the given figure, circle represents youths, triangle represents the persons who are in job and rectangle represents illiterate person.



Which of the following number depicts illiterate youths who have a job?

- (1) 5 (2) 4 (3) 3
(4) 10 (5) None of these

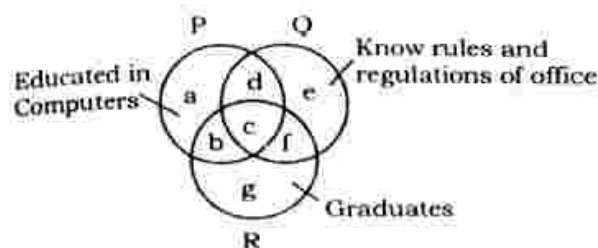
9. In the given Venn-Diagram, circle represents sportsperson, square represents unmarried, triangle represents women and rectangle represents literate. Each part has a number in it. Study the diagram and answer the following questions.



Which classes are represented by number 11? 14.

- (1) Married, literate sportswomen
- (2) Unmarried, illiterate sportswomen
- (3) Married, literate sportsmen
- (4) Unmarried, literate sportswomen
- (5) None of these

Directions (10 - 14): In the following diagram, there are 3 intersecting circles showing 3 different classes, one showing those candidates who have knowledge in computers, second showing those who know rules and regulations of office and third showing graduates. Each part of the diagram is represented by an alphabet.



10. Which alphabet represents those candidates who have knowledge in computers, know rules and regulations of office but are not graduates?

- (1) b
- (2) c
- (3) d
- (4) f
- (5) None of these

11. Which alphabet represents those candidates who have knowledge in computers but are neither graduates nor they know rules and regulations?

- (1) a
- (2) b
- (3) c
- (4) d
- (5) None of these

12. Which alphabet represents those candidates who know computers and are graduates but do not know about rules and regulations?

- (1) e
- (2) e
- (3) c
- (4) b
- (5) None of these

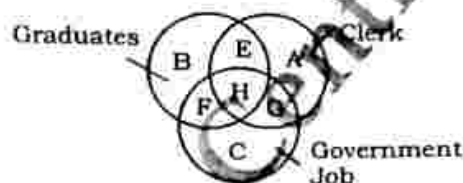
13. Which alphabet represents those candidates who have knowledge in computers, know rules and regulations of office and are also graduates?

- (1) b
- (2) c
- (3) f
- (4) g
- (5) None of these

Which alphabet represents those candidates who are graduates, know rules and regulations of office but don't know computers?

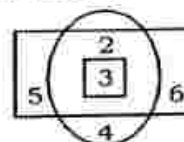
- (1) c
- (2) e
- (3) f
- (4) g
- (5) None of these

15. Which part represents those clerks who are graduates and have government job?



- (1) E
- (2) H
- (3) G
- (4) F
- (5) None of these

Directions (16 - 19): In the following figure circle represents literate, bigger rectangle represents healthy and smaller rectangle represents rich people:



16. Which number represents those literates who are neither rich nor healthy?

- (1) 4
- (2) 2
- (3) 5
- (4) 6
- (5) None of these

17. Illiterates who are not healthy is represented by:

- (1) 2
- (2) 4
- (3) 6
- (4) None of these

18. Choose which is not correct:

- (1) To be rich, one must be literate
- (2) To be rich, one must be healthy
- (3) All rich are healthy and literate.
- (4) None of these

19. Choose which is right:

- (1) Literates who are neither healthy nor rich are zero in number.
- (2) Some rich are those who are not literate.
- (3) All rich are not healthy and literate.
- (4) Only in case of health, people represented by 4 are different from people represented by 2.

20. Which of the following is best represented by the above diagram?



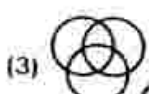
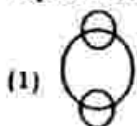
- (1) Human, Sea, Mountain
(2) Domestic, Dog, Buffalo
(3) Doctor, Nurse, Patient
(4) Sun, Moon, Water
(5) None of these

21. Which of the following is the best represented in diagram?



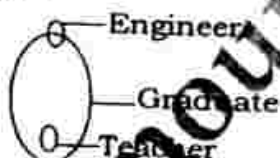
- (1) Chair, Table, Furniture
(2) Doctor, Social person, honest person
(3) Family, Parents, Children
(4) Gold, Silver, Ornaments
(5) None of these

22. District, State, Country are the best represented in:



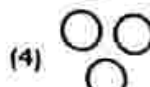
- (5) None of these

23. According to the diagram choose the wrong statement:



- (1) Some graduates are engineers
(2) All graduates are either engineers or teachers
(3) No teacher is an engineer
(4) Some engineers are not graduates
(5) None of these

Directions (24 - 28): Four diagrams are given for each question. Choose the best diagram that describes it.



- (5) None of these

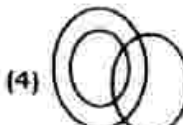
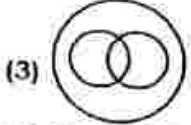
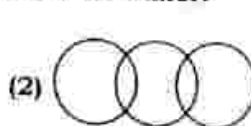
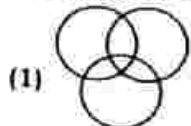
24. Cot, Furniture, Book
25. Fish, Reptile, Snake
26. Outdoor game, Cricket, Hockey
27. India, America, Nigeria
28. India, Meghalaya, Pondicherry.

Directions (29 - 38): Choose the suitable diagram which represents the relation among the different classes given below.



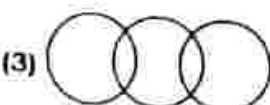
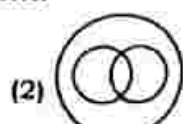
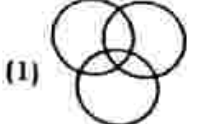
29. Children, Boy, Girl
30. Paper, Book, Stationery
31. Apple, Fruit, Vegetable
32. Wheat, Pulse, Grain
33. Sun, Mars, Planet
34. Elephant, Wolf, Animal
35. Pigeon, Dog, Bird
36. Teacher, Women, Student
37. Elephant, Tiger, Four-footed animal.
38. Revolver, Gun, Explosive

39. Which of the following diagram represents the correct relation among - Bad Elements, Pick pocket and Black-mailer.



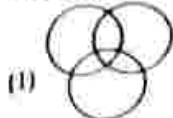
- (5) None of these

40. Which of the following diagram shows the correct relation among Tennis Player, Cricket Player and Student.



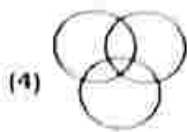
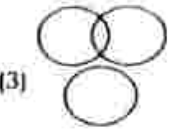
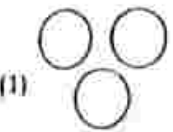
- (5) None of these

41. Which of the following diagram shows the relation between Triangle, Quadrilateral and Square.



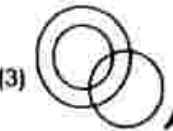
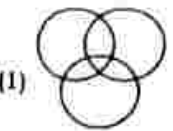
(5) None of these

42. Which of the following diagram shows the relation among Elected member, M.P. and M.L.A.?



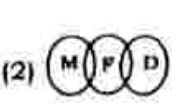
(5) None of these

43. Which of the following diagram shows the relation among Woman, Mother and Doctor?



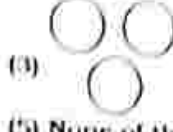
(5) None of these

44. There are few members in a club in which some are female doctors. Then which of the following diagrams does not support this statement. (Here M = Member, F = Women and D = Doctor)



(5) None of these

45. Which of the following diagram shows the relation among Husband, Wife and Family?



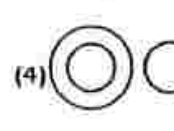
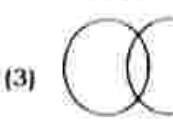
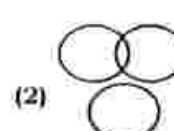
(5) None of these

46. Which of the following diagram shows the students who learn law and Music, music and Dance and who learn law, Music and Dance.



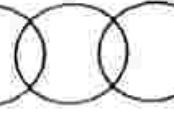
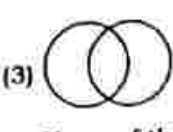
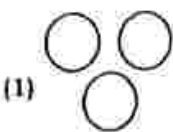
(5) None of these

47. Which of the following diagram shows the Musicians, Instrument/Players and Violinist.



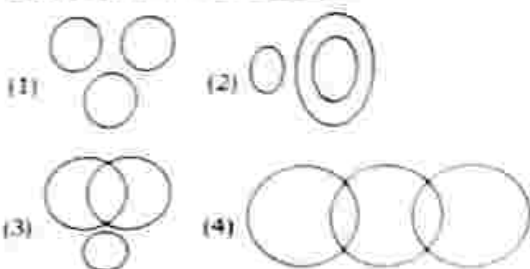
(5) None of these

48. Which of the following diagram shows Mammals, Cows and Crows?



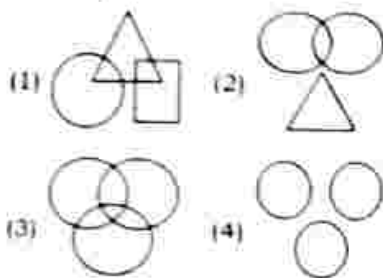
(5) None of these

49. Which of the following diagram represents Doctors, Professors & Engineers



(5) None of these

50. Which of the following diagram represents the relation among Friend, Guide and Philosopher?



(5) None of these

Answers with Explanations:-

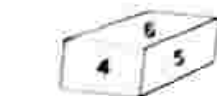
1. 4; There are only 4 numbers which are present in all the three figures, which are 5, 20, 14, 18.
Hence, the answer is (4).
2. 2; Powerful and disciplined boys means the number should be present in circle, rectangle and square.
Hence, the answer is (2).
3. 2; The letters which represents those artists who are doctor as well as dancers are C, H and G.
Hence, the answer is (2).
4. 1; The letters which represent those artists who are neither scientists nor doctors are B and A.
Hence, the answer is (1).
5. 2; The letters which represents those artists who are doctor as well as dancers are C, H and G.
Hence, the answer is (2).
6. 3; The number which represents those artists who are neither doctors, nor scientists and nor dancers are A.
Hence, the answer is (3).
7. 4; The scientists who are not artists is F.
Hence, the answer is (1).
8. 3; The number of illiterate young and who have a Job are three.
Hence, the answer is (3).
9. 4; Here the number 11 represents women who are Unmarried, Literate and Sports person.
Hence, the answer is (4).
10. 3; Candidates who have knowledge in computers, know rules and regulation of office but are not Graduates are d.
Hence, the answer is (3).
11. 1; Those who have knowledge in computers but they are neither graduates nor they know rules and regulations are represented by a.
Hence, the answer is (1).
12. 4 13. 2 14. 3 15. 2
16. 1; Those how are neither rich nor healthy but are literates are represented by 4.
Hence, the answer is (1).
17. 4; There are no such illiterates.
Hence, the answer is (4).
18. 4; All the statements given in the question are correct.
Hence, the answer is (4).
19. 4; People represented by 4 are different than people represented by 2.
Hence, the answer is (4).
20. 2; The figure is most suitable for the Domestic, Dog and Buffalo.
Hence, the answer is (2).
21. 2; Some doctors are social person. Some social persons are honest person. Also, some honest persons are doctors.
Hence, the answer is (2).
22. 4 23. 2 24. 1 25. 1 26. 3 27. 4
28. 3 29. 4 30. 2 31. 2 32. 4 33. 2
34. 4 35. 2 36. 1 37. 4 38. 4 39. 3
40. 1 41. 3 42. 2 43. 3 44. 2 45. 4
46. 1 47. 1 48. 2 49. 4 50. 3

Dice is a 3 dimensional object, which when seen from any direction shows its 3 surfaces to us. Its length, breadth and height all are equal. It has six surfaces. Each surface has 4 adjacent surfaces and no two opposite surfaces can be seen at a single time. On its 6 surfaces numbers from 1 to 6 are written or there could be figures, indications or different colours shown on them. Dice are of two types -

(a) Standard dice

(b) Ordinary dice

- (a) **Standard dice:** In a standard dice, sum of its any two opposite sides is 7, and no two adjacent sides can give sum of 7. Such dice is known as standard dice. Like-



$$6 + 5 = 11$$

$$5 + 4 = 9$$

$$6 + 4 = 10$$

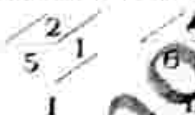


$$1 + 2 = 3$$

$$4 + 2 = 6$$

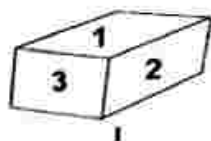
$$1 + 4 = 5$$

- (b) **Ordinary dice:** In an ordinary dice, any two opposite surfaces can't give sum of 7, but its adjacent sides may sum to 7, such dice is known as ordinary dice.



Important facts:

- Any dice can't be categorized as standard or ordinary if we know only one face each of three pair surfaces. In such case it is impossible to determine any two opposite sides of that dice.



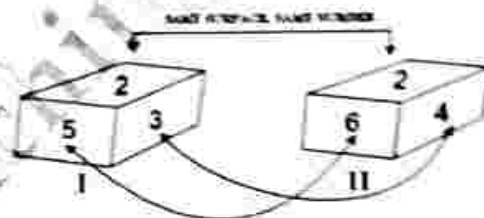
In above dice, which number will be opposite to 1?

- Sol. As we have 2 and 3 adjacent to 1, so both of them can never be opposite to 1. But

the number 4, 5 or 6

which we can't see, can come opposite to 1, and as we don't know anything except this, we can't determine the exact number. So either of 4, 5 or 6 can come opposite to 1.

- If any dice is represented in 2 ways and in both situations, only one digit/symbol/colour is common and is represented on the same surface then the surface opposite to the common digit/symbol/colour is the digit/symbol/colour missing.



Means:

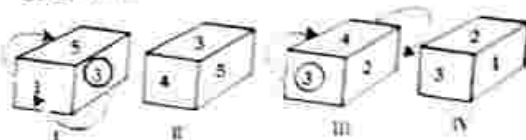
5 is opposite to 6

3 is opposite to 4

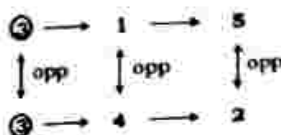
And

2 is opposite to 1 (As we can see 2, 3, 4, 5 and 6 in figure and the number missing is 1, hence number opposite to 2 is 1.)

- Universal Rule:** This rule can be applied to any dice (standard or ordinary). It is applicable when we have been given 2, 3 or 4 situations of a dice. To understand this rule, let us see an example. We have been provided with 4 situations of a dice.



By Fig I and Fig III:



After studying this figure we have to predict which number is opposite to which number, or we have to decipher value of each face of the dice shown. Now, according to the rule, identify any two situations in which we have only one digit common. See fig. (1) and (3). In both of them we have only one digit in common i.e. 3. Now look at the fig. (1) and write the numbers as you see clockwise, starting from the common number. Here we have 3 - 1 - 5

Now look at the second selected figure which has only 3 in common and write its number, as we see clockwise starting from the common number. Here we have 3 - 4 - 2

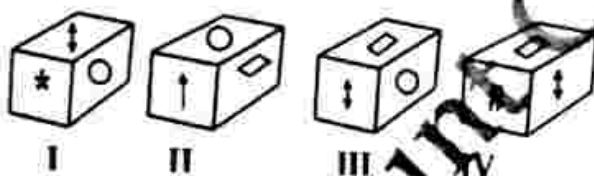
Now write both of them, one above the other as

3 - 1 - 5

3 - 4 - 2

This implies 1 is opposite to 4, 5 is opposite to 2. Now, only digit left is 6, and that would be opposite to our common number 3. By this method we can reveal all the numbers within few seconds.

Ex. 2.



Which symbol will be opposite to (I)?

Sol. From universal rule we will take fig (i) and (iv) because only (I) symbol is common in them. After taking two figures write the symbol appearing clockwise from our common symbol (I).

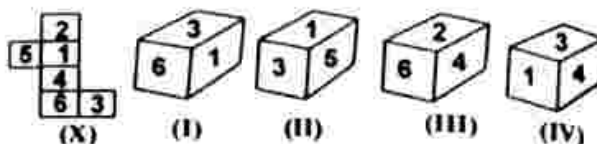
We will have:-

Fig. (i) (I) - O - *

Fig. (iv) (I) - # - □

Hence, O is opposite to #, * is opposite to □ and the only symbol left is I which will be opposite to our common symbol I.

4. Sometimes we are provided with an explanatory diagram and after folding it in a proper manner it forms a dice. Which of the following dice will be formed from the explanatory diagram given?



Sol. From the given figure, first we will find numbers on opposite faces.
Like:

1 opposite 4
2 opposite 5
3 opposite 6

To find out opposite faces, take alternate numbers vertically i.e. Take 2, then leave its adjacent face (i.e. 1) and then take 4. So, 2 is opposite to 4, similarly 1 is opposite to 6 and remaining numbers 5 and 3 are opposite to each other.

In dice I, we can see 1 and 6 which cannot be possible as two opposite faces cannot be seen at the adjacent side. Hence this dice cannot be obtained by folding the explanatory diagram.

In dice II, we can see 5 and 3 which cannot be possible as two opposite faces cannot be seen at the adjacent side. Hence this dice cannot be obtained by folding the explanatory diagram.

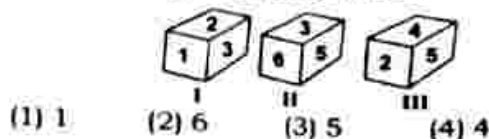
In dice III, we can see 2 and 4 which cannot be possible as two opposite faces cannot be seen at the adjacent side. Hence this dice cannot be obtained by folding the explanatory diagram.

In dice IV, 6, 5 and 2 cannot be seen which are the opposite faces of 1, 3 and 4 respectively. Hence our dice is dice IV.

Exercise:

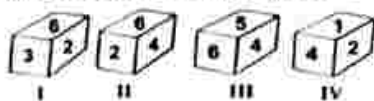
Directions (1 - 4): In the questions given below one dice has been shown in different positions, whose sides have 1 to 6 digits printed on them. Study the following positions and answer the following.

1. In the dice given below which number will be on the opposite side to 3?



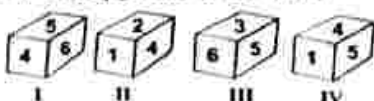
(1) 1 (2) 6 (3) 5 (4) 4

2. In the dice given below which number will be on the opposite side to 6?



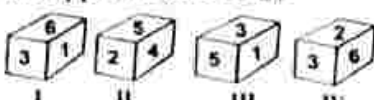
(1) 1 (2) 2 (3) 3 (4) 4

3. In the dice given below which number will be on the opposite side to 3?



(1) 1 (2) 2 (3) 4 (4) 6

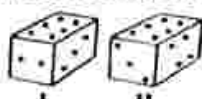
4. In the given dice which number will be on the opposite side to 3?



(1) 2 (2) 3 (3) 4 (4) 6

Directions (5 - 7): In the pictures given below two positions of a single dice is shown. Each side of the dice has dots (.) printed on it, which vary from one to six. Study the positions and answer the following questions accordingly.

5. If there are three dots at the bottom, then how many dots will be on top?



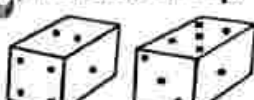
(1) 1 or 5 (2) 2 (3) 4 (4) 5

6. If the number of dots is three on top then how many will be at bottom?



(1) 1 (2) 4 (3) 5 (4) 6

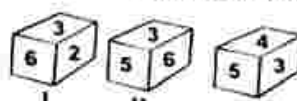
7. If 4 dots are at bottom then what will be the number of dots on top?



(1) 3 (2) 2 (3) 5 (4) 6

Directions (8 - 21): A dice has been shown in more than one positions. On their faces there can be digits/symbols/dots etc. Study carefully the different positions given and

answer the following questions.



8. What will be the digit opposite to 2?

(1) 1 (2) 4 (3) 5

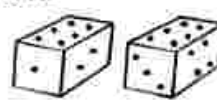
(4) Can't be determined.

9. Dice given below has been shown in four positions on which digit 1 to 6 has been shown. What will be opposite to digit 2 on this dice?



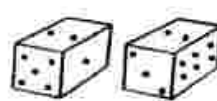
(1) 3 (2) 4 (3) 5 (4) 6

10. A dice has been shown in two positions as given below. If the number of dots is 6 at bottom. Then what will be the number of dots on top of it?



(1) 1 (2) 2 (3) 4 (4) 5

11. A dice has been given below in two positions. If number of dots on top is 1 then what will be the number of dots at bottom?



(1) 1 (2) 2 (3) 3 (4) 6

12. In question 11, which number will be on the opposite face to 6?

(1) 1 (2) 5 (3) 4

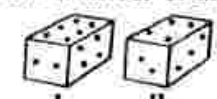
(4) Can't be determined.

13. In question 11, what will be at the bottom face in position I?

(1) 1 (2) 4 (3) 5

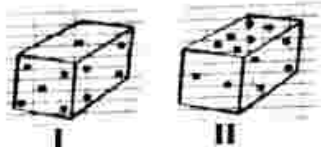
(4) None of these

14. If the number of dots is 3 at bottom then what will be the number of dots on top?



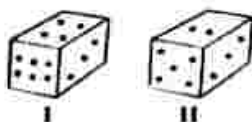
(1) 2 (2) 1 (3) 4 (4) 6

15. A dice has been shown below in two positions. If the number of dots on top is 4 then what will be the number of dots at bottom?



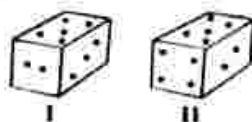
- (1) 2 (2) 3 (3) 5 (4) 6

16. A dice has been shown below in two positions. If the number of dots at bottom is 2 then what will be the number of dots on top?



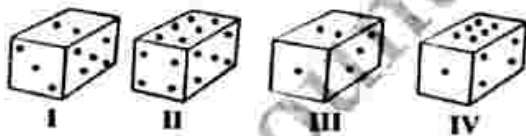
- (1) 1 (2) 4 (3) 5 (4) 6

17. A dice has been given below in two positions. If the number of dots at bottom is three then what will be the number of dots on top?



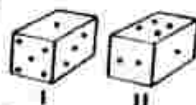
- (1) 2 (2) 3 (3) 4 (4) 6

18. What will be the number of dots opposite to the surface of 2 dots?



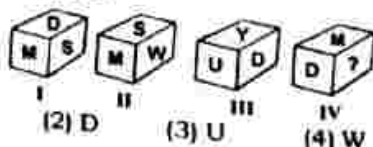
- (1) 1 (2) 4 (3) 5 (4) 6

19. If the bottom of the dice shows 2 dots, then what would be the number of dots on its top?



- (1) 2 (2) 3 (3) 5 (4) 6

20. Which alphabet will come in place of question mark?



- (1) S (2) D (3) U (4) W

21. Colours of rainbow are shown on the faces of a dice. Which colour among the seven colours is left?



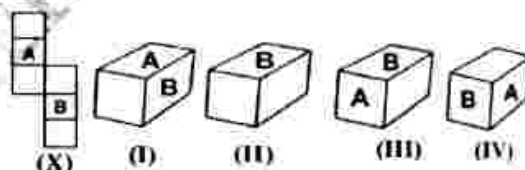
- (1) blue (2) green
(3) yellow (4) violet

- Directions (22 - 29): In each question an explanatory figure of dice is given. Study the figure and identify the correct dice formed by that figure.**

22.

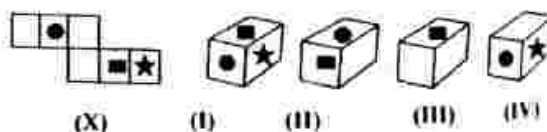


23.



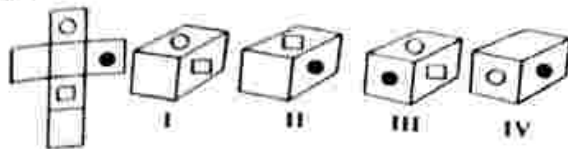
- (1) I, II and IV only
(2) I, II and III only
(3) II only
(4) II and IV only

24.



- (1) I, and II only
(2) II, III and IV only
(3) IV only
(4) III and IV only

25.



(X)

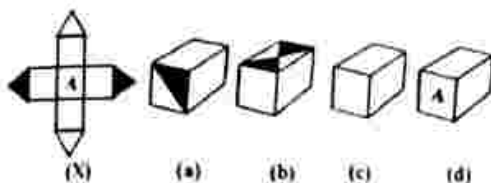
(1) I and III only

(2) II, III and IV only

(3) II and IV only

(4) III and IV only

26.



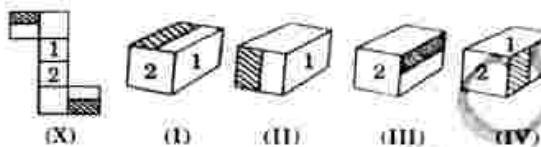
(1) a and c only

(2) b and d only

(3) b and c only

(4) b, c and d only

27.



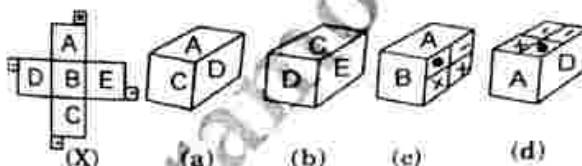
(1) I, II, III and IV

(2) only I and II

(3) only II and III

(4) only I, II, and III

28.



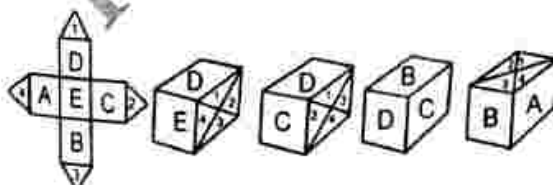
(1) (a) and (b) only

(2) (c) and (d) only

(3) only (a)

(4) None of these

29.



(X)

(a)

(b)

(c)

(d)

(1) only (a) and (b)

(2) only (a)

(3) only (c) and (d)

(4) only (d)

30.

How many minimum number of colours would be used to colour each surface of a dice so that no two adjacent surfaces have the same colour?

(1) 3

(2) 4

(3) 5

(4) 6

31.

Which alphabet can come in place of question mark?



(1) D

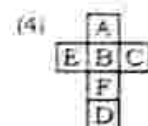
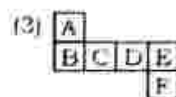
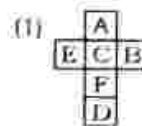
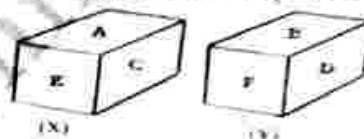
(2) F

(3) E

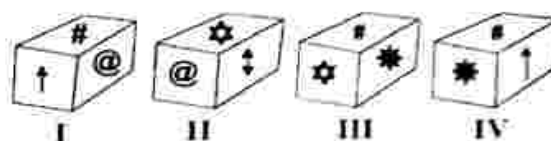
(4) can't be determined

32.

Below are given explanatory figures of a single dice shown in two positions. determine the correct explanatory figure.



Directions (33 - 35): Study all the positions of a dice and answer the following:



33. Which symbol will be opposite to #?

(1) ↓

(2) ↑

(3) *

(4) *

34. Which symbol will be opposite to ↓?

(1) @

(2) ↑

(3) *

(4) #

35. Which symbol will be in opposite to *

(1) @

(2) ↑

(3) ↓

(4) *

Answer with Explanation:

1. 4; According to the universal rule, if we identify two positions in which we have only one number in common then, we will write their sequence in clockwise manner. After studying we come to know that position I and III have only one digit in common which is 2. Writing the sequence in clockwise direction writing our common number first gives - 2 - 3 - 1. And in position III we get - 2 - 4 - 5. So according to the rule 4 is opposite to 3.
2. 1; Look at the positions I and IV of the given dice. We get only number 2 as common. write down the numbers in clockwise direction starting from 2, we get
2 - 3 - 6
2 - 4 - 1
Obviously, 6 is opposite to 1, 3 is opposite to 4 whereas 2 is opposite to 5.
3. 3; Look at the positions III and IV of the given dice. We get only number 5 as common. Write down the numbers in clockwise direction starting from 5, we get
5 - 6 - 3
5 - 1 - 4
Obviously, 3 is opposite to 4, 6 is opposite to 1, whereas 5 is opposite to 2.
4. 3; Look at the positions II and III of the given dice. We get only number 5 as common. Write down the numbers in clockwise direction starting from 5, we get
5 - 4 - 2
5 - 3 - 1
obviously, 3 is opposite to 4, 2 is opposite to 1 whereas 5 is opposite to 6.
5. 1; Look at the two positions of the dice carefully. The adjacent surfaces of three dots surface are two, four and six dots surfaces. Therefore, these three surfaces can't be opposite to the surface having three dots.
Thus, the surface opposite to three dots surface is either one dot surface or five dots surface.
6. 3; Here, 2 is common surface,
2 - 1 - 5
2 - 6 - 3
Obviously, 5 is opposite to 3, 1 is opposite to 6, whereas 2 is opposite to 4.
7. 1; Here, 1 is common surface.
1 - 4 - 2
1 - 3 - 5
Obviously, 4 is opposite to 3, 2 is opposite to 5, whereas 1 is opposite to 6.
8. 3; From positions I and III, we get,
3 - 2 - 6
3 - 5 - 4
Obviously, 2 is opposite to 5, 6 is opposite to 4, whereas 3 is opposite to 1.
9. 3; Look at the positions I and III of the given dice. Two numbers 3 & 4 are common. In this case the third number visible in position I will be opposite to the third number visible in position III.
Thus, we can conclude that 2 is opposite to 5.
10. 4; Here, 6 is common surface
6 - 2 - 1
6 - 4 - 3
Obviously, 2 is opposite to 4, 1 is opposite to 3, whereas 6 is opposite to 5.
11. 4; Here, 2 is common surface.
2 - 1 - 5
2 - 6 - 3
Obviously, 1 is opposite to 6, 5 is opposite to 3, whereas 2 is opposite to 4.
12. 1; Look at the explanation of the 11th question.
13. 2
14. 4; Look at the two positions of the dice. Two surfaces (4 dots and 2 dots) are common. Hence, we can conclude that 6 dots surface is opposite to 3 dots surface.
15. 2; Here, 4 is common surface.
4 - 5 - 1
4 - 2 - 6
Obviously, 5 is opposite to 2, 1 is opposite to 6, whereas 4 is opposite to 3.
16. 2; Here, 3 is common surface.
3 - 6 - 4
3 - 5 - 2
Obviously, 6 is opposite to 5, 4 is opposite to 2, whereas 3 is opposite to 1.
17. 3; In the given positions two surfaces (2 dots and 5 dots) are common. Therefore, the third surface remaining in both the positions must be opposites to each other. Hence, 3 dots surface is opposite to 4 dots surface.
18. 4; Look at the positions I and II of the given dice.
Here, we get

5 - 3 - 2

5 - 4 - 6

Obviously, 3 is opposite to 4, 2 is opposite to 6,

whereas 5 is opposite to 1.

19.2: Here, dot 1 is common surface.

1 - 3 - 5

1 - 2 - 4

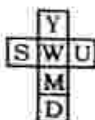
Obviously, 3 is opposite to 2, 5 is opposite to 4,

whereas 1 is opposite to 6.

20.3: If we open the dice it will look as follow,



Now, if D is on facing surface, M is on top then the right surface will be occupied by U.



21.4: Others are clearly visible.

22.4: Here, from diagram X we get

$B \leftrightarrow D$

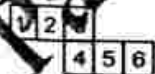
$A \leftrightarrow F$

$E \leftrightarrow C$

Reject the diagram I, since A and F can't be on the adjacent surface, because A is on the surface opposite to F. Similarly, reject the diagram II, because C and E can't be on the adjacent surfaces. Also, reject the diagram III, because B and D can't be on the adjacent surfaces.

23.3: Look at the diagram (X). On the basis of the given diagram we can conclude that A is opposite to B. Reject the diagrams I, III and IV because in these diagrams A and B are shown on adjacent surfaces.

24.4:



Look at the diagram shown above. If we fold the diagram in order to give it a shape of dice, we get

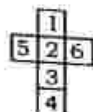
1 is opposite to 3

4 is opposite to 6

2 is opposite to 5

Now, with the help of the hint shown above, observe the diagram X carefully.

we get $\bullet$ is opposite to $\blacksquare$. Hence, reject the diagram I and II. In these two diagrams shaded ball and shaded rectangle are shown on adjacent surfaces.



Look at the diagram shown above. If we fold the diagram in order to give it a shape of dice, we get

1 is opposite to 3

2 is opposite to 4

5 is opposite to 6

Now, observe the given diagram X, we get that unshaded circle is just opposite to the surface which consists of rectangle.

Reject the diagram I and III, because in these two diagrams unshaded circle and rectangles are shown on adjacent surfaces.

26.2 27.4 28.4 29.4 30.1

31.2: From diagram I and II we get

A - B - C

A - D - F

Thus, we get that

B is opposite to D,

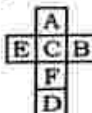
C is opposite to F,

A is opposite to E.

Look at the positions I and IV carefully, two surfaces are common.

Therefore the question mark in the position IV will be replaced by F.

32.1:



According to the above diagram A is on the surface opposite to F, C is on the surface opposite to D, E is on the surface opposite to B.

33 - 35: From positions I and II, we get

@ - $\uparrow$ - #

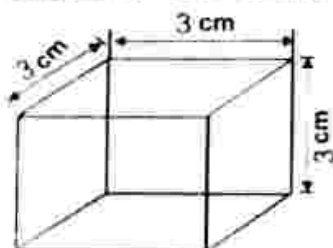
@ - $\star$ - $\dagger$

Now, we can conclude that $\uparrow$ is on the surface opposite to $\star$, # is on the surface opposite to $\dagger$, whereas @ is on the surface opposite to $\star$.

33.1 34.4 35.1

1. **Cube:** A cube is a three dimensional object whose length, breadth and height are all of equal measures. In addition to this a cube has the following properties:

- (a) A cube will always have six surfaces.
 - (b) A cube will always have twelve edges, and
 - (c) A cube will always have eight corners.
- Here, **Length (s) = Breadth (s) = Height (s)**



2. **Cuboid:** A cuboid is such a three dimensional object whose length, breadth and height will always be of unequal or different measures. In addition to this a cuboid has the following properties which are similar to those of a cube:

- (1) A cuboid will always have six surfaces
- (2) A cuboid will always have twelve edges and
- (3) A cuboid will always have eight corners

Here, **Length (s) $\neq$ Breadth (s) $\neq$ Height (s)**

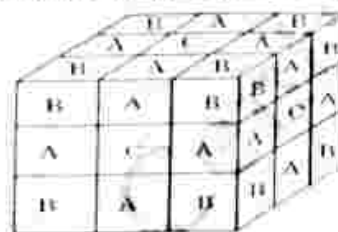


3. After cutting a bigger cube/cuboid into smaller cubes/cuboids of equal dimensions, we obtain different cube/cuboids from the different portions of the original cube/cuboids. These are called by different names as follows -

- (a) The Central cube
- (b) The Middle cube
- (c) The Corner cube
- (d) The Inner cube

To identify these cubes the original cube

is coloured on all the faces with a single colour and then this coloured cube is divided into smaller ones as follows.



In the given figure
A = is the Middle cube
B = is the Corner cube
C = is the Central cube

4. According to the colour, the cubes have been classified as -

(a) Central Cube: This cube is located exactly in the middle portion of the original/uncut cube. In addition, this cube has colour on its one face only. The above given figure shows this cube marked as C.

(b) Middle Cube: This cube is located on the middle portions of the different edges of the original cube. The above given figure shows this cube marked as A.

(c) Corner Cube: This cube is located on each of the corners of the original cube. It has three of its faces coloured. In the above given figure this cube has been marked as B.

(d) Inner Cube: This cube is located at the central point of the original cube and the "central" cubes surround it from all sides. Thus this cube is not visible. In addition to this none of this cube's face is coloured.

5. Some important techniques to determine and calculate different cubes after cutting and subdividing the original cube.

$$\text{Total No. of cubes} = (x)^3$$

$$\text{Inner cube} = (x - 2)^3$$

$$\text{Central Cube} = 6(x - 2)^2$$

$$\text{Middle Cube} = 12(x - 2)$$

$$\text{Corner Cube} = (x - 2)^3$$

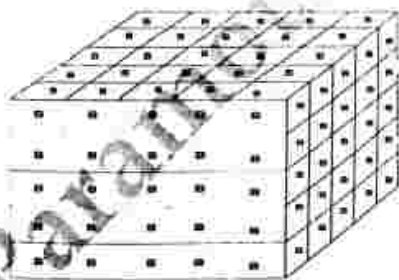
6. Some Important questions based on cubes/cuboids:

Ex. (I):

A cube of 5 cm length has been coloured black on each surface and then it has been subdivided into smaller cubes of length 1 cm.

Now, answer the following questions based on the information provided above-

- How many cubes are there with only one face coloured black?
(1) 5 (2) 12 (3) 18
(4) 17 (5) None of these
- How many cubes are there which have three of their faces coloured black?
(1) 6 (2) 8 (3) 4
(4) 3 (5) None of these
- How many cubes are there which have only two of their faces coloured black?
(1) 20 (2) 24 (3) 38
(4) 36 (5) None of these
- How many cubes are there which have none of their faces coloured with any colour?
(1) 18 (2) 17 (3) 26
(4) 39 (5) None of these
- How many cubes will be obtained after cutting the original bigger cube of 5 cm?
(1) 24 (2) 625 (3) 125
(4) 64 (5) None of these

Sol.

1. 5;

∴ The central cubes are coloured only on

one of their surfaces/faces.

So, according the formula,

Central cubes = $6 \times (x - 2)^2$ (Here putting $x = 5$)

$$= 6 \times (5 - 2)^2 = 6 \times (3)^2 = 6 \times 9 = 54$$

2. This is because it is the corner cube which has its three surfaces coloured and in any cube or cuboid, there are always 8 corner cubes. So the answer should be 8 cubes.
4. The middle cubes have their two surfaces coloured.
Therefore, according to the formula,
Middle cubes = $12(x - 2)$ (Here, putting $x = 5$)
 $= 12(5 - 2) = 12 \times 3 = 36$ cubes.
5. The inner cubes do not have any coloured surface.
Inner cubes = $(x - 2)^3$ (Here, putting $x = 5$)
 $= (5 - 2)^3 = 3^3 = 27$ cubes.
3. The total number of cubes = x^3 (Here putting $x = 5$)
 $= 5^3 = 125$

Ex. (II):

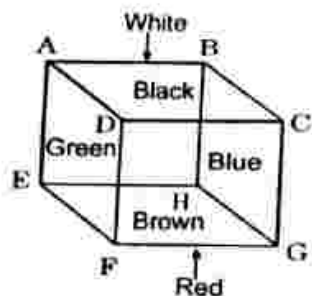
The six surfaces of a cube are coloured with Black, Brown, Green, Red, White and Blue colours in such a way that-

- The Red colour is on the lower surface of the cube
- The Red colour is on the opposite surface of the Black surface.
- The Green colour is between the Black and the Red colours.
- The Brown colour is adjacent to the base.
- The Blue colour is adjacent to the white colour.

Sol. Now, answer the following questions based on the above given facts-

- What will be the colour opposite to the brown coloured surface?
(1) White (2) Red (3) Green
(4) Blue (5) None of these
- Which of the following colours faces the green coloured surface?
(1) Red (2) Green (3) White
(4) Blue (5) None of these
- Which one of the following groups of colours meet at the corners of the cube?
(1) Black, White and Blue
(2) Brown, White and Green
(3) White, Green and Blue
(4) Red, Black and Green
(5) None of these

Sol.



Here,

Black surface = ABCD

Red surface = EFGH

Blue Surface = BCGH

Green Surface = ADEF

White surface = ABHE

Brown surface = DCGF

Hence,

- 1; White colour surface is opposite to the brown colour surface.
- 4; Blue colour will be facing the green colour.
- 1; Blue, White and Black colours will meet at the corner of the given cube.

Ex. (III):

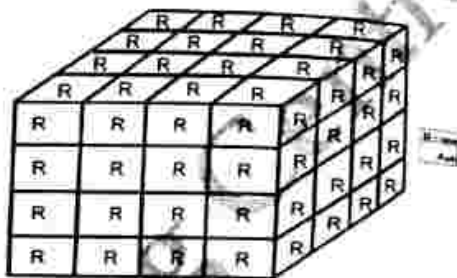
All the surfaces of a solid cube have been coloured red and then cut and subdivided into 64 equal sized cubes.

Now, answer the following questions after carefully reading the above information-

1. How many cubes are there which have their three surfaces coloured.
(1) 4 (2) 8 (3) 16
(4) 24 (5) None of these
2. How many cubes are there which do not have any of their surfaces coloured.
(1) 0 (2) 8 (3) 16
(4) 24 (5) none of these
3. How many cubes are there which have two of their surfaces coloured with red on the opposite surface.
(1) 0 (2) 8 (3) 12
(4) 6 (5) None of these
4. How many cubes are there with just one surface coloured?
(1) 4 (2) 8 (3) 16
(4) 24 (5) none of these

5. How many cubes are there with two adjacent surfaces coloured in red and rest of the surfaces with no colours?
(1) 16 (2) 24 (3) 48
(4) 32 (5) none of these

Sol. Let us suppose the given cube is coloured red from all sides.



- 1; Only the corner cubes are coloured on three sides and if there are more than one layer, the corner cubes will be 8 in all circumstances.
- 2; None of the surfaces of the inner cubes are coloured. If we can find out the number of inner cubes, we can easily determine the number of cubes with no coloured surface.

$$\text{inner cube} = (x - 2)^3 = (4 - 2)^3 = 2^3 = 8$$

$$\therefore \text{No. of cubes} = 8$$

- 1; Because the number of layers is more than one, so in this particular case, there will be no such cubes which have two coloured surfaces at the opposite sides.
 $\therefore \text{No of cubes} = 0$

- 4; It is the central cube which has only one surface coloured. So after identifying the central cube, we can easily find the required no. of cubes.

$$\begin{aligned} \text{Central cubes} &= 6 \times (x - 2)^2 = 6 \times (4 - 2)^2 \\ &= 6 \times (2)^2 = 6 \times 4 = 24 \end{aligned}$$

- 2; We know that, the middle cube has two adjacent surfaces coloured surfaces and four surfaces without any colour. So, if we find the number of the middle cubes, then calculating the required cubes would be easier-

$$\begin{aligned} \text{Middle Cube} &= 12 \times (x - 2) = 12 \times (4 - 2) \\ &= 12 \times 2 = 24 \end{aligned}$$

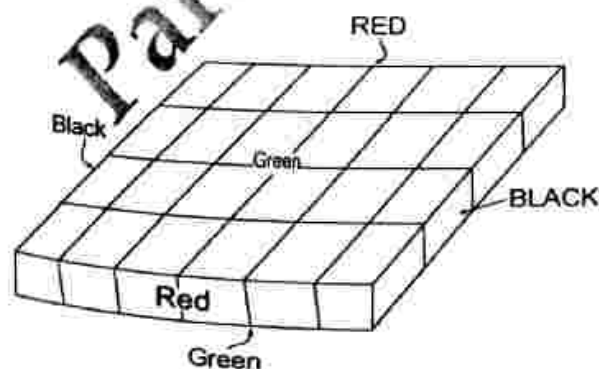
Ex. (IV):

Answer the following questions based on the information given below-

- A rectangular wooden block with dimensions length 6 cm, breadth 4 cm and height 1 cm, has been taken.
- The two sides with measurements 4 cm $\times$ 1 cm have been painted Black.
- The two sides with measurements 6 cm $\times$ 1 cm have been painted Red.
- The two sides with measurements 6 cm $\times$ 4 cm have been painted Green.
- This block has been subdivided into six equal parts (on 6 cm sides) and four equal parts (on 4 cm sides).

- How many cubes are there which have Black, Green and Red colours on, at least, different sides-
 (1) 8 (2) 10 (3) 12
 (4) 16 (5) none of these
- What is/are the total number of cubes present here?
 (1) 6 (2) 12 (3) 16
 (4) 24 (5) none of these
- Supposing that the cube with Black and Green colour are removed, then how many cubes would be left?
 (1) 4 (2) 8 (3) 12
 (4) 16 (5) none of these
- How many cubes are there with their two surfaces painted Green and the remaining four surfaces have no colour at all
 (1) 4 (2) 8 (3) 10
 (4) 12 (5) none of these
- How many cubes are there with four of their sides coloured but the remaining two sides have no colour at all?
 (1) 4 (2) 8 (3) 10
 (4) 16 (5) none of these

Sol.



In the figure given above the front and the back surface is painted Red, the left and the right surface is painted Black and the upper (Roof) and the lower (ground) surface is painted Green.

1. 5;

$\therefore$ We know that only the corner cube has colours on its three surfaces, but when there is only one layer of cubes, then the corner cube will have four coloured surfaces. Now according to the demand of the question we need a cube/cubes with Black, Red and Green Colours. For this we have to calculate the number of corner cubes and this comes out to be = 4. (Answer)

2. The total number of Cubes = the given Volume of the cube
 $= \text{length} \times \text{Breadth} \times \text{Height}$
 $= 6 \times 4 \times 1 = 24$ (Answer)
4. The above cube shows that there are four cube with the black colour painted on them. When we remove them from our calculation then we obtain the remaining number of cubes. Now this is (equal to) = The Total number of cubes - 8 = 24 - 8 = 16 (Answer)
2. From the figure only centred cubes have two surface painted green. By calculating the no. of such cubes is $4 \times 2 = 8$ cubes.
1. The above cube contains four such smaller cubes which have green colour on two surfaces, Black colour on one surface and Red colour on another single surface. Whereas there is no colour painted on the remaining two surfaces.

Examples:

- A cube of 3 cm. side has been coloured blue on all of its surfaces and then cut into smaller cubes of length 1 cm. each. Calculate how many of the smaller cubes will be obtained having two of their surfaces coloured?
 (1) 8 (2) 4 (3) 6
 (4) 12 (5) None of these
- A cube has been coloured with different colours on each of its surfaces. The bottom face of the cube has been coloured red and the upper surface has been coloured white. Now, the remaining four surfaces have been coloured, in clockwise

direction with green, yellow, blue and violet colours respectively. What will be the colour of top surface if the surface coloured with yellow colour is being considered as the base?

- (1) Blue (2) Green (3) Violet
(4) Red (5) None of these

3. All the surfaces of a cube of side 4 cm, have been coloured and then cut into smaller cubes of length 1 cm each. Find out how many smaller cubes would be obtained which have been painted only on one of their surface(s)?

- (1) 24 (2) 16 (3) 8
(4) 32 (5) None of these

Directions (4 - 6): A cubical toy having six surfaces has been given pictures of different fruits on each of its 6 surfaces, which are Orange, Watermelon, Mango, Banana, Grapes and Apple but not in the same order. Orange is on the topmost surface. To the adjacent surface of Banana lies the Watermelon and the Apple is not at the bottom surface of the given cube and Watermelon lies on the opposite surface containing the picture of the Grapes.

4. Which of these pictures is not on the adjacent surface of mango which is on the 6th surface?
(1) Apple (2) Orange (3) Grape
(4) Banana (5) None of these
5. What will be the picture exactly opposite to Apple?
(1) Banana (2) Grapes (3) Orange
(4) Mangoes (5) None of these
6. Which of these pairs of fruits are not on the correspondingly opposite surfaces of the cube?
(a) Orange-Mango
(b) Apple-Banana
(c) Apple-Mango
(d) All of these
(e) None of these

Directions (7 - 10): These are based on the information given below. Study the following information carefully to answer the questions given below.

All the correspondingly opposite surfaces of a solid cube of side 16 cm, have been coloured with red, green and blue colours. Thereafter

this cube is cut and changed into smaller cubes

7. How many cubes are there with three of their surfaces coloured as blue, green and red?

- (1) 6 (2) 8 (3) 16
(4) 12 (5) None of these

8. How many cubes are there which have any of their surface coloured?

- (1) 6 (2) 8 (3) 16
(4) 24 (5) None of these

9. How many cubes are there which have only two of their surfaces coloured?

- (1) 4 (2) 8 (3) 12
(4) 24 (5) None of these

10. How many cubes are there having only one of their surfaces coloured?

- (1) 8 (2) 16 (3) 12
(4) 24 (5) None of these

Directions (11 - 15): These are based on the information given below. Study the following information carefully to answer the questions given below:

A solid cube is coloured red on two of its opposite surfaces, blue on two adjacent faces and yellow on the remaining faces. It is now cut into two parts so that both red surfaces get separated from each other. After this, one part is cut into four bigger cubes of equal measures and dimensions and the other in 32 smaller cubes of equal length.

11. How many cubes are there which have at least one of their surface coloured blue?

- (1) 4 (2) 14 (3) 16
(4) 20 (5) None of these

12. How many cubes are there which has at least two of their surfaces coloured?

- (1) 4 (2) 14 (3) 16
(4) 20 (5) None of these

13. How many cubes are there which do not have any of their surfaces coloured with any colour?

- (1) 0 (2) 2 (3) 4
(4) 8 (5) None of these

14. How many cubes are there which have only one coloured surface and that too with yellow colour?

- (1) 4 (2) 14 (3) 16
(4) 18 (5) None of these

15. How many cubes are there which do not have red colour on any of their surfaces?

(1) 10 (2) 16 (3) 14
(4) 18 (5) None of these

Directions (16 - 20): These are based on the information given below. Study the following questions carefully to answer the questions given below:

- (i) Two wooden cubes P and Q have been placed near each other in front of you in such a way that the cube P is on your left and the cube Q is on your right side.
- (ii) Cube P's one pair of correspondingly opposite surfaces are coloured red and the other pair is coloured as blue, whereas out of the remaining two surfaces, one is coloured yellow and the other is coloured violet.
- (iii) Cube Q's two opposite surfaces have been coloured blue and the rest of the surfaces have been coloured in such a manner that the brown coloured surface is exactly opposite to the green coloured surface and the black coloured surface lies exactly opposite to the white coloured surfaces.
16. If the cube Q's black surface is placed on the red surface of the cube P, then what will be the colour of the surface of Q that will face the sky?
- (1) White (2) Blue (3) Brown
(4) Data Insufficient (5) None of these
17. If cube Q is kept to your left in such a manner that its green surface faces you and the cube P is kept to your right in such a manner that its blue coloured surface is facing you then which of these coloured surfaces of the cubes P and Q would be facing each others?
- (1) Yellow-Black (2) Yellow-White
(3) Black-Violet (4) Violet-White
(5) None of these
18. If the red surface of the cube P and the blue surface of the cube Q touches the table and the yellow surface of the cube P and the black surface of the cube Q is facing you, then which of the following coloured surfaces of the cube Q would be facing the blue coloured surface of the cube P?

(1) Brown (2) Green (3) White
(4) Either Brown or Green
(5) None of these

19. If the given cubes are kept on top of each other in such a way that the white surface of the cube Q faces the sky and the yellow surface of the cube P is on top of it, then which coloured surface would you be facing you?

(1) Violet (2) Blue
(3) Either blue or black
(4) Either Blue or Violet (5) None of these

20. If cube Q is kept behind cube P in such a manner that cube Q's brown face is in front of cube P's yellow face, then which of the following coloured surfaces of Q would be on your right side?

(1) Blue (2) Black (3) Green
(4) White (5) None of these

Directions (21 - 30): These are based on the information given below. Study the following information very carefully to answer the following questions:

Three surfaces of a solid cube have been coloured yellow, blue and green. Now, the yellow colour is opposite to yellow, blue colour is exactly opposite to blue, and green is opposite to the green colour. Thereafter, this cube is cut into 36 equal parts such that 32 cubes are of the same size while four others are of bigger size. Also no face of any of the bigger cubes have blue colour.

21. How many cubes are there which have blue colour on at least one of its surfaces?
- (1) 0 (2) 8 (3) 16
(4) 32 (5) None of these
22. How many cubes are there which have only one of their surfaces coloured?
- (1) 0 (2) 4 (3) 8
(4) 12 (5) None of these
23. How many cubes are there which have only two of their surfaces coloured?
- (1) 24 (2) 20 (3) 16
(4) 8 (5) None of these
24. How many cubes are there which have at least two of their surfaces coloured?
- (1) 36 (2) 34 (3) 28
(4) 24 (5) None of these

25. How many cubes have only three of their surfaces coloured?
 (1) 8 (2) 4 (3) 2
 (4) 0 (5) None of these
26. How many cubes are there which do not have yellow colour on any of their surfaces?
 (1) 0 (2) 4 (3) 8
 (4) 16 (5) None of these
27. How many cubes are there that have at least one of their surfaces coloured as green?
 (1) 0 (2) 8 (3) 16
 (4) 20 (5) None of these
28. How many cubes have at least one of their surfaces coloured with either yellow or green colour?
 (1) 36 (2) 32 (3) 16
 (4) 0 (5) None of these
29. How many cubes are there that do not have any colour on any of their surfaces?
 (1) 8 (2) 4 (3) 1
 (4) 0 (5) None of these
30. How many cubes are there that have two of their surfaces coloured with yellow and green colours respectively?
 (1) 0 (2) 8 (3) 12
 (4) 16 (5) None of these
31. How many cubes are there which have at least one of their surfaces coloured Red?
 (1) 40 (2) 16 (3) 32
 (4) 64 (5) None of these
32. How many cubes are there which have only one of their faces coloured?
 (1) 10 (2) 8 (3) 16
 (4) 24 (5) None of these
33. How many cubes are there which have only two of their faces coloured?
 (1) 48 (2) 40 (3) 32
 (4) 16 (5) None of these
34. How many cubes are there which have at least two or more than two of their surfaces coloured?
 (1) 32 (2) 68 (3) 56
 (4) 48 (5) None of these
35. How many cubes are there which have three of their faces coloured?
 (1) 8 (2) 4 (3) 12
 (4) 2 (5) None of these
36. How many cubes are there which do not have any colour on any of their surfaces?
 (1) 4 (2) 8 (3) 12
 (4) 6 (5) None of these
37. How many cubes are there which have at least one of their surfaces coloured Green?
 (1) 30 (2) 16 (3) 32
 (4) 40 (5) None of these
38. How many cubes are there which have at least one of their surfaces coloured, either Red or Green?
 (1) 72 (2) 64 (3) 32
 (4) 40 (5) None of these
39. How many cubes are there which have at least one surface coloured Red and opposite surface coloured Green?
 (1) 0 (2) 4 (3) 8
 (4) 2 (5) None of these
40. How many cubes are there which have two of their adjacent surfaces coloured Red and Green? (Considering only two sides).
 (1) 8 (2) 16 (3) 24
 (4) 32 (5) None of these

Directions (31 - 40): A solid cuboid has been coloured Black on two of its opposite sides, Red on the two other opposite sides and Green on remaining two opposite sides. It is then cut into 72 cubes in such a manner that the 64 cubes are smaller and the remaining 8 cubes are bigger in size. The bigger cubes should not have any of their surfaces coloured Black.

31. How many cubes are there which have at least one of their surfaces coloured Red?
 (1) 40 (2) 16 (3) 32
 (4) 64 (5) None of these
32. How many cubes are there which have only one of their faces coloured?
 (1) 10 (2) 8 (3) 16
 (4) 24 (5) None of these
33. How many cubes are there which have only two of their faces coloured?
 (1) 48 (2) 40 (3) 32
 (4) 16 (5) None of these

Directions (41 - 47): Read the informations given below and answer the questions based on it

- (i) A dice have 6 sides and each side has a number (1 to 6) and a colour.
- (ii) 3, 6 lies correspondingly opposite to 1, 5.
- (iii) When you see number 2 and Red surface then you find that the Green colour and number 4 are exactly opposite to it and the White colour and number 1 lies on the top.
- (iv) Yellow and Blue are in front of each other.
- (v) When you observe the Pink colour in front of you, you find number 2 on the top, number 3 on your right and Blue colour on your left number?

41. Which of these following four colours touch the blue coloured surface?
 (1) Red, Green, Pink, Yellow
 (2) Green, Pink, Yellow, White
 (3) Red, White, Pink, Green
 (4) Can't be determined (5) None of these
42. When digit 1 is in front of you then which of the colours definitely lies at the bottom?
 (1) Green (2) Blue (3) Yellow
 (4) Can't be determined (5) None of these
43. Which colour is represented by digit 5?
 (1) Blue (2) Yellow (3) Pink
 (4) Can't be determined (5) None of these
44. Which of the following colours is represented by digit 3?
 (1) Blue (2) Yellow (3) Pink
 (4) Can't be determined (5) None of these
45. When Green colour is in front of you then which number is definitely on the top?
 (1) 1 (2) 5 (3) 6
 (4) Can't be determined (5) None of these
46. When the number 4 is at the top then which colour would be in front of you?
 (1) Either Blue or Yellow
 (2) Either Pink or Red
 (3) Either Pink or White
 (4) Either White or Green
 (5) Either White or Red
47. If digit 6 is in front of you then which colour would be definitely on the opposite surface to this surface?
 (1) Green (2) Red (3) Blue
 (4) Can't be determined (5) None of these
48. A rectangular block with dimensions $6 \times 4 \times 2$ cms, has been cut and changed into smaller cubes of dimension 1 cm each. Calculate how many total number of smaller cubes would be obtained?
 (1) 64 (2) 48 (3) 32
 (4) 96 (5) None of these
49. A carpenter is given a solid cube on a condition that, he will convert it into smaller cubes and no part of this original cube should be left as waste. He is paid Rs 7.50 per cutting and finally he earns Rs 135 as the total wage. Calculate how

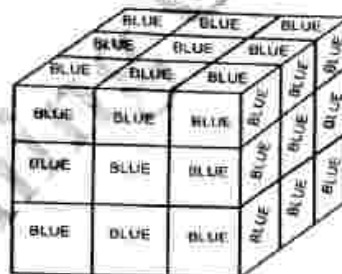
many smaller cubes did he make?
 (1) 243 (2) 343 (3) 216

(4) 225 (5) None of these

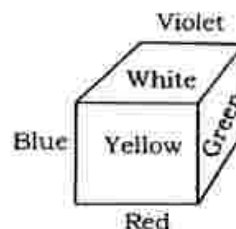
50. To obtain smaller cubes of length 1 cm from the solid cube of length 4 cms, how many times should it be cut?
 (1) 3 (2) 9 (3) 6
 (4) 2 (5) None of these

Answers with Explanation:

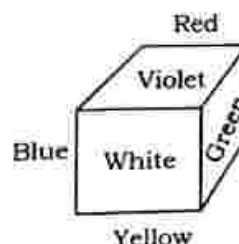
1. 4; According to question, following cube will have 12 cubes whose both surfaces are coloured as blue.



According to question, when the said cube is coloured with Green, Yellow, Blue and Violet colours, the following cube is obtained.

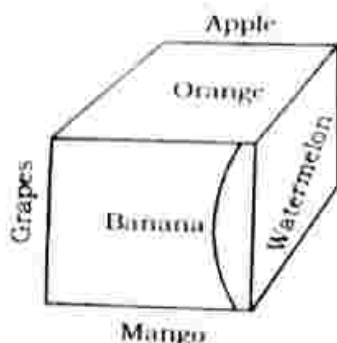


When the Yellow coloured surface is considered as base, we will get Violet colour on the exactly opposite surface/face to the yellow coloured surface, as shown in the figure.



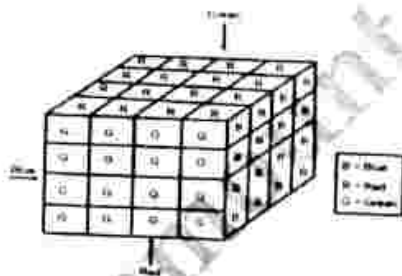
3. 1. According to question, from the one surface of the cube we get 4 cubes. Thus from the 6 surfaces of cube we will get 24 cubes which will have only single coloured surface.

Directions (4 - 6): Position of cube will as follows:



4. 2. In the following figure the surface depicting Mango is opposite to the surface depicting Orange. Thus Orange is not on the adjacent surface of the surface depicting Mango.
5. 1. Apple is exactly opposite to the surface depicting Banana.
6. 3. These are adjacent depiction pictures.

Directions (7 - 10): position for cube will be as follows:



7. 2. Since the Corner cube have three coloured surfaces thus it will always be 8 in number. Therefore it is clear that the Corner cube will possess three colours Blue, Green and Red respectively. Therefore number of cubes = 8.
8. 2. Since Inner cube does not have any of its sides coloured. Thus we can easily calculate the number of Inner cube with this formula.
- Numbers of inner cubes
 $= (x - 2)^3 = (4 - 2)^3 = (2)^3 = 8$
 Thus, number of inner cubes are 8

9. 2. Middle cube have only two faces coloured. Thus we can calculate the number of middle cubes with the following formula:

Number of middle cubes

$$= 12(x - 2) = 12(4 - 2) = 24$$

Thus, number of cubes = 24

10. 4. Central cube will have only single face coloured. We can thus calculate the number of central cubes with the following formula.

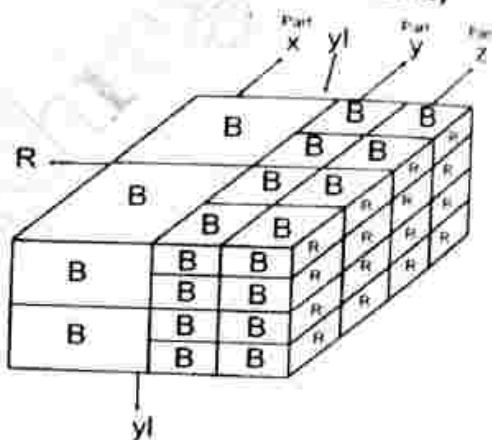
Number of central cubes

$$= 6(x - 2)^2 = 6(4 - 2)^2 = 24$$

Thus, Number of cubes = 24

Directions (11 - 15): Position for cube will be as follows:

(Note: At least one surface = one or more than one surface)



B = Top Surface = Blue

B = Front Surface = Blue

R = Rightside Surface = Red

R = Leftside Surface = Red

Yl = Backside Surface = Yellow

Yl = Bottom Surface = Yellow

11. 5. Blue coloured face cubes for at least one face are as follows:

From the front and top face minimum number of big cubes of Blue colour = 3

From the front and top face minimum number of small cubes of

Blue colour = 14

Therefore total number of cubes are $3 + 14 = 17$.

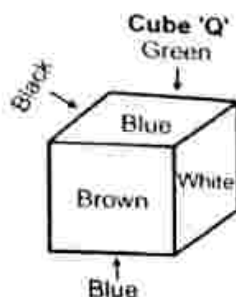
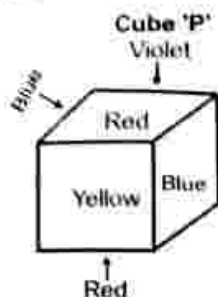
12. 2. Since two and three faces are coloured for middle cube and corner cube respectively. Thus according to question, we have to find the total number of middle and corner cubes from the above mentioned cube.

Thus number of cubes with three face coloured are 8 and number of cubes with two faces coloured are 12.

Therefore total number of cubes = $8 + 12 = 20$.

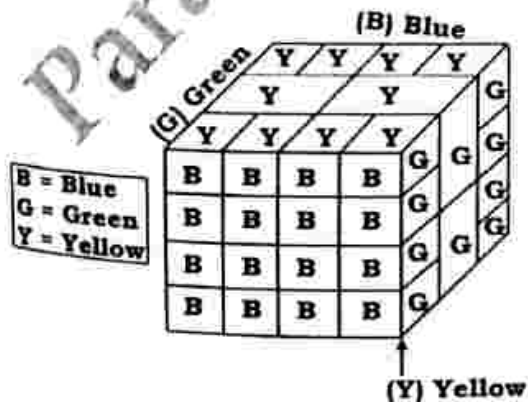
- 13.3. Since the inner cube does not have any coloured face, so there will be 2 cubes, which do not have any coloured face, from the part we have 4 such cubes.
- 14.1. Since central cube has only one face coloured, so there are 2 such cubes in part Y and 2 such cubes in YI part. In total we have 4 such cubes.

15.2. In We have such cubes from part Y only
Directions (16 - 20): Position for cube will be as follows:



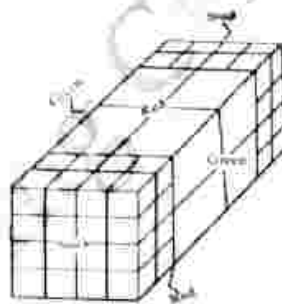
- 16.1. White face is exactly opposite to the Black coloured surface of the cube Q. Therefore if Black surface of cube 'Q' is kept above the Red face of cube 'P' then White face of cube 'Q' will be definitely on the top face.
- 17.5. Cannot be determined because there are many possibilities.
- 18.4 19.3
- 20.5. Cannot be determined because there are many possibilities.

Directions (21 - 30): Position for cube will be as follows:



- 21.4; $6 \times 16 = 32$
 22.3; $4 \times 2 = 8$
 23.2; $(8 \times 2) + 4 = 20$
 24.3; $(12 \times 2) + 4 = 24 + 4 = 28$
 25.1; $4 + 4 = 8$
 26.4; $8 \times 2 = 16$
 27.4; $(8 \times 2) + 4 = 20$
 28.1; 36
 29.4; 0
 30.3; $(4 \times 2) + 4 = 12$

Directions (31 - 40): Position for cube will be as follows:



- 31.1. It is clear from the above figure that on the top face 20 cubes and in the bottom face, 20 cubes are coloured Red. So, $20 + 20 = 40$
- 32.4; As we know that only one surface is coloured on central cube (Top surface = 4) + (bottom surface = 4) + (front surface = 4) + (back surface = 4) + (left side surface = 4) + (right side surface = 4), total = 24.
- 33.5; Since two faces are coloured of Middle cube. Number of middle cubes is as follows On the separate ends - $4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 32$
- 34.5; Since Middle cube's two faces and corner cube's three faces are coloured Middle Cube = 32 and Corner Cube = 8 Thus Required number of cubes = $32 + 8 = 40$
- 35.1; Since only corner cubes have three face coloured. Thus required number of cubes = 8.
- 36.2; Since Inner cube does not have any coloured face, total number of cubes will be 8.
- 37.4; Cubes with at least one face coloured green is as follows:
 (i) On the Right face total number of cubes = 20
 (ii) On the left face total number of cubes = 20

Thus, required number of cubes
 $= 20 + 20 = 40$

38. 5; From the above figure it is clear that total number of cubes with only one face coloured Red

$$= 20 \times 2 = 40 \text{ and}$$

only one face coloured Green

$$= 20 \times 2 = 40$$

Thus, required number of cubes

$$= 40 + 40 = 80$$

39. 1; There is no cube which has one face coloured Red and exactly opposite face coloured Green

40. 2; from the above figure it is clear that total number of cubes which have two adjacent faces coloured Red and Green are 10

Directions (41 - 47): Position for cube will be as follows:

Surface	No.	Colour	Surface	No.	Colour
Top	1	White	Top	2	Red
Bottom	5	Pink	Bottom	4	Green
Front	2	Red	Front	5	Pink
Back	4	Green	Back	1	White
Left	3	Yellow	Left	6	Blue
Right	6	Blue	Right	3	Yellow
Position - I			Position - II		

41. 3

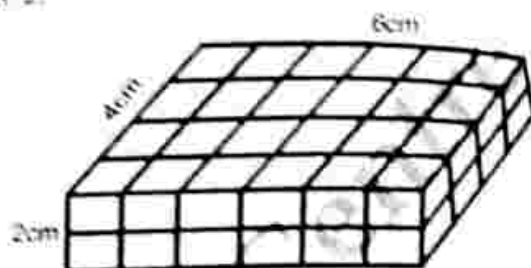
42. 5; When number 2 is situated in front then

Pink colour is at the bottom. Therefore Red colour will be at bottom when number 1 is in front

$$44. 2 \quad 45. 2 \quad 46. 3$$

6. (Blue) is in opposite to the 3 (Yellow)

$$48. 2;$$



From the above figure it is clear that in each layer there are 24 cubes

49. 2; Total wages given = 135

Wage given on every cutting = ₹ 7.50

Therefore number of cutting = $135 / 7.50 = 18$

Thus, $18 / 3 = 6$

Therefore $x = 6 + 1 = 7$

(Note: If any cubes is to be cut in x parts then the corner is cut in $(x-1)$ part thus total number of cubes = $x^3 = 7^3 = 343$)

Thus required number of cubes = 343

50. 2; Total number of cutting = $(4-1) \times 3 = 9$

The method of Venn diagrams

Step I: Draw standard representations for both the statements separately as given below:

Note: By standard representation we represent the way which is the most common and usually sufficient to denote the statement.

For eg. - "Some X are Y" can be represented as:



But, for all practical purposes the first of these representation suffices. And this is the standard representation for an I-type proposition.

Types of Statements:-

1. All books are pens - **A type** (Means all +ve)
2. No books are pens - **E type** (Means all -ve)
3. Some books are pens - **I type** (Some +ve)
4. Some books are not pens - **O type** (Some -ve)

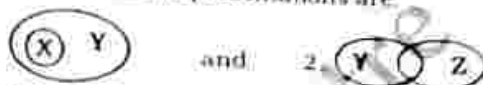
Given below is a table of standard representation.

Statement of type	Standard representation
A (All X are Y)	
E (No X are Y)	
I (Some X are Y)	
O (Some X are not Y)	

Step II: Now try to combine the representations (as drawn in step I) in as many ways as possible.

Note: When we say as many ways as possible, we mean that you should combine the representations in all possible ways. For example, if statement (1) is "All X are Y" and

statement (2) is "Some Y are Z" then the standard representations are:



They can be combined in more than one ways. The possible ways are:



Therefore, step II asks you to draw all possible combinations.

Step III: Finally, make interpretations of the combined figures (obtained from step II). Any given conclusion will be true if it is supported by all the combined figures and no combined figure contradicts it.

For eg. In the illustration to step II, we see that a conclusion that "Some X are Z" is supported by Fig. (ii) but not by fig. (i). Since it is not supported by all the figures it does not follow. Minimum encroachment technique will make your work easier.

Choose one from the above three diagrams (a, b and c) the one which has least encroachment. A careful survey of the figures reveal that figure (i) has minimum encroachment. In figure (i) the whole part of X is inside Y. Some part of Y is in Z but we do not have clear information about the relation between X and Z.

Figure (i) is sufficient to consider the conclusions.

Ex. 1: Statements:

All cats are bats.

All bats are tables.

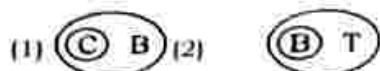
Conclusions:

(I) Some tables are bats.

(II) Some tables are cats.

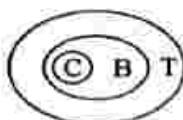
Sol.

Step I: Looking at table, we draw the standard representations for the two statements:



Let B = bats, C = cats, T = tables.

Step II: Now combine figure (1) and figure (2) in all possible ways. Figure (1) and figure (2) can be combined in only one way. That is:



Step III: We see that both conclusions: 'Some tables are bats' and 'Some tables are cats' are supported by the combined figure. Hence, both conclusions follow.

Ex. 2: Statements:

Some tables are watches.

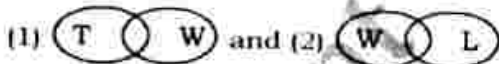
Some watches are lamps.

Conclusions:

(I) Some tables are lamps.

(II) Some tables are not lamps.

Sol. Step I:



Let T = tables, W = watches, L = lamps

Step II: Combining figure (1) and figure (2) in all possible ways:



Out of the four figures, figure (i) is the minimum encroachment figure.

According to figure (i), some part of table is watch. Some part of watch is lamp but we do not have any information about the relation between table and lamp.

Now see the conclusions given.

Since we do not have any information about the relation between the table and lamp. So we cannot decide whether the two conclusions are right or wrong.

We must pay attention that both the conclusions cannot be wrong simultaneously.

So one out of two conclusions must be definitely correct.

Note: Prepare your solution based on minimum encroachment technique for the examples given below.

Ex. 3: Statements:

No tables are watches.

Some watches are lamps.

Conclusions:

(I) Some lamps are not tables.

(II) Some lamps are tables.

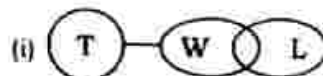
Sol.

Step I: We draw standard representation as drawn in the table or step I.



Let T = tables, W = watches, L = lamps

Step II: Now we combine the two figures in all possible ways. They are:



Step III: We see that the conclusion 'Some lamps are not tables' is always supported by all the possible combinations. Hence the conclusion (I) is true.

Ex. 4: Statements:

All rivers are mountains.

Some rivers are deserts.

Conclusions:

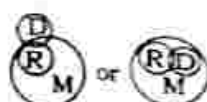
(I) Some mountains are deserts.

(II) Some deserts are not mountains.

Sol.

River = R, Mountain = M, Desert = D

Step I:



Step II: Combine



Step III: When all rivers are mountains and some rivers are deserts, then some mountains will be deserts. Therefore, only conclusion (I) is correct.

Ex 5: Statements:

All men are horses.
All horses are elephants.

Conclusions:

(I) All men are elephant.
(II) All elephant are men.

Elephants = E, Horses = H, Men = M

Sol. Step I & II



Step III When all men are horses and all horses are elephants then naturally all men are elephants, but all elephants need not be men. Therefore only conclusion (I) is correct.

Ex 6: Statements:

All talented persons are trustworthy.
Some trustworthy are musicians.

Conclusions:

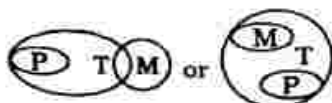
(I) All talented persons are musicians.
(II) Some musicians are not talented persons.

Talented person = P

Trustworthy = T

Musicians = M

Sol. Step I & II



Step III According to venn diagram, conclusion (I) and (II) both do not follow.

Ex. 7: Statements:

Some engineers are teachers.
Some engineers are efficient.

Conclusions:

(I) Some teachers are efficient.
(II) All efficient are engineers.

Efficient = E, Engineers = G, Teacher = T

Sol. Step I



Step II



Step III When some engineers are teachers, then some teachers are engineers. Also, when some engineers are efficient, then some efficient are engineers. Therefore, both the conclusions are do not follow.

Ex. 8: Statements:

Some foods are sweet.
Some foods are sour.

Conclusions:

(I) All foods are either sweet or sour.
(II) Some sweet are sour.

Sour = S, Food = F, Sweet = T

Sol. Step I



Step II



Step III When some foods are sweet and some foods are sour, then all foods are not necessarily sweet or sour and what is sweet need not be sour. Therefore, neither of the conclusion is correct.

Ex. 9: Statements:

All cups are goats
All goats are tins

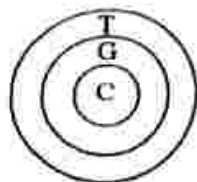
Conclusions:

(I) All goats are cups
(II) All tins are goats
(III) No cups are tins
(IV) No tins are cups

- (1) Only conclusions III and IV follow
- (2) Only conclusion I and II follow
- (3) Only conclusions I, II and III follow
- (4) All conclusions are correct
- (5) None of these

Cup = C, Goat = G, Tin = T

Sol. Step I & II



Step III When all cups are goats, then some goats must be cups. when all goats are tins, then some tins can be goats. When all cups are goats and all goats are tins, then naturally all cups are tins and some tins must be cups. Therefore, all the conclusions are do not follow.

Ans (5)

Ex 10: Statements:

All birds are peacocks.
All peacocks are farmers.

Conclusions:

- (I) Some farmers are birds.
- (II) Some peacocks are birds.
- (1) Only conclusions I and II follows
- (2) Only conclusions II and III follow
- (3) Data is insufficient
- (4) All conclusions are correct
- (5) None of the above

Birds = B, Peacock = P, Farmer = F

Sol. Step I & II



Step III When all birds are peacocks, which are all farmers, then all birds are farmers. When all birds are peacocks, then some peacocks must be birds and when all birds are farmers, then some farmers must be birds. Therefore, all conclusions are correct.

Ans. (4)

Ex.11: Statements:

No chair is tree.
All trees are trains.

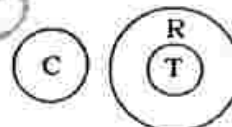
Conclusions:

- (I) No chair is train.
- (II) No trains is chair
- (III) Some trains are trees.
- (IV) No train is tree.
- (1) Only IV follows
- (2) Only III and IV follow
- (3) Only I and II follow
- (4) Only II and III follow
- (5) None of these

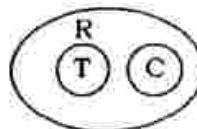
Chair = C, Tree = T, Train = R

Sol.

Step I



Step II



Step III When all tree are trains then some trains must be trees. Also from the given two statements we can conclude that some trains are not chair. Hence, no chair is train and vice versa cannot be established with certainty. Therefore, only conclusion III is correct.

Ans. (5)

Ex.12: Statement:

Some bags are pockets.
No pocket is a pouch.

Conclusions:

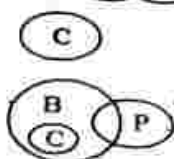
- (I) No bag is a pouch.
- (II) Some bags are not pouches.
- (III) Some pockets are bags.
- (IV) No pocket is a bag.
- (1) Only either I or IV follow
- (2) Only II and III follow
- (3) Only I and III follow
- (4) All follow
- (5) None of follows

Bag = B, Pocket = P, Pouch = C

Sol. Step I



Step II



Step III Some bags are pockets, so some pockets must be bags. Also, when 'Some bags are pockets' and 'no pockets are pouches' then we can conclude that some bags (which are pockets) are not pouches. Therefore, only conclusions II and III are correct.

Ans. (2)

Ex. 13: Statements:

All soil are diamonds.
No gold is a diamond.
Some golds are foils.

Conclusions:

- (I) No soil is a diamond.
- (II) Some foils are not diamonds.
- (III) Some soils are golds.
- (IV) Some foils are soil.
- (1) Only I and II follow
- (2) Only II follows
- (3) Only I and III follow
- (4) Only I, III and IV follow
- (5) None of these

Soil = S, Diamond = D, Gold = G, Foil = F

Sol. Step I & II



or



Step III Only II follows

Ex. 14: Statements:

Some bells are flowers.
Some cards are bells.
No cards are papers.

Conclusions:

- (I) Some bells are papers.
- (II) Some papers are not bells.
- (III) Some flowers are cards.
- (IV) Some bells are not papers.

Ans. (2)

Ex. 16: Statements:

Some pillows are beds.
Some leaders are pillows.
All ministers are beds.

Conclusions:

- (I) Some pillows are not beds.
- (II) No pillow is a minister.
- (III) Some leaders are not pillows.
- (IV) Some ministers are pillows.

(1) Only III and IV follow

(2) Only I and II follow

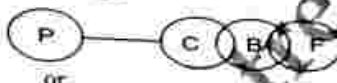
(3) Only II follows

(4) Only IV follows

(5) Either I or IV and II follow

Card = C, Bell = B, Flower = F, Paper = P

Sol. Step I & II



or



Step III Only IV follows

Ans. (4)

Ex. 15: Statements:

Some diaries are pockets.
All pockets are digitals.
Some digitals are purses.

Conclusions:

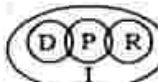
- (I) Some pockets are digitals.
- (II) Some diaries are digitals.
- (III) Some diaries are purses.
- (IV) Some diaries are not purses.
- (1) Only I, II and III follow
- (2) Only I, II and IV follow
- (3) Only II and III follow
- (4) Only II and either III or IV follow
- (5) Only I, II and either III or IV follow

Diary = D, Pocket = P, Purses = R, Digital = I

Sol. Step I



Step II



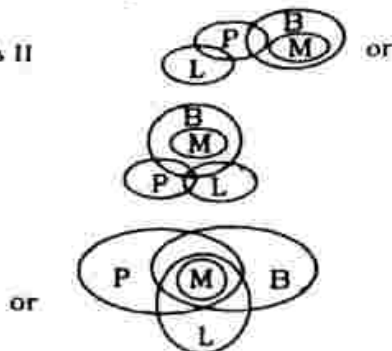
Step III Here III and IV are complementary pairs and statement I and II follows.

Ans. (5)

- (1) Either I or IV follow
- (2) Either II or IV follow
- (3) Either I or IV and II follow
- (4) Only III follow
- (5) None of these

Leader = L, Pillow = P, Bed = B, Minister = M

Sol. Step I & II



Step III Here II and IV are complementary pair. So either II or IV follows.

Ans. (2)

Ex. 17: Statement:

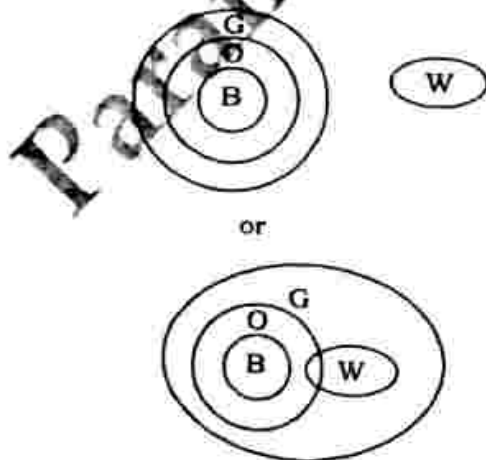
- No water is black.
- All goods are green
- All blacks are good.

Conclusions:

- (I) Some greens are not water.
- (II) Some greens are black.
- (III) Some blacks are water.
- (IV) Some blacks are green.
- (1) Only II and IV follow
- (2) Only I, II and IV follow
- (3) Either I or III follow
- (4) Only II, III and IV follow
- (5) None of these

Black = B, Goods = G, Green = G, Water = W

Sol. Step I & II



Step III Only I, II and IV follow.

Ans. (2)

Rule of complementary pair

If out of all two conclusions of the statement are doubtful and out of these two conclusions one is positive and the other negative and the terms (subject and predicate) of both the conclusions are same, then both the conclusions make the conclusions of 'either' case. See the examples given below.

Ex. 18: Statement:

1. All books are papers.
2. Some papers are pencils.

Conclusions:

- (I) All books are pencil (-)
- (II) Some books are not pencil (-)

If both conclusions are doubtful and conclusion (I) is positive and conclusion (II) negative and the terms of both the conclusions i.e. 'books' and 'pencils' are same then conclusion (I) and (II) form case of 'either'

Ex. 19: Statements:

- Some rods are trees.
- Some trees are flowers.

Conclusions:

- (I) Some rods are flowers. (-)
- (II) Some flowers are trees. (✓)
- (III) Some rods are not flowers. (-)
- (IV) Some trees are rods. (✓)

Sol.

Both conclusions I and III are doubtful and conclusion (I) is positive and conclusion (III) negative and the terms of both the conclusions i.e. 'rods' and 'flowers' are same then conclusion (I) and (II) form case of 'either'. So answer will be:- only either (I) or (III) and (II) & (IV) follow.

Ex. 20: Statements:

- Some toys are pens.
- Some pens are papers.
- Some papers are black.

Conclusions:

- (I) All toys are black. (-)
- (II) Some pens are not black. (-)
- (III) No toy is black. (-)
- (IV) Some pens are black. (-)

- (1) None follows
- (2) Only either I or IV follows
- (3) Only either I or III and either II or IV follow
- (4) Only either I or III follows
- (5) None of these

Ans (3)

Sol.

Here, all four conclusions are doubtful. Conclusion (I) is positive and conclusion (III) is negative and the terms of both the conclusions i.e. 'toys' and 'black' are same then conclusion (I) and (III) form case of 'either'. Again conclusion (II) is negative and conclusion (IV) is positive and the terms of both the conclusions i.e. 'pens' and 'black' are same. So conclusion (II) and (IV) form case of 'either'. **Ans. (3)**

Ex.21: Statements:

Some beggars are leaders.

No caps are keys.

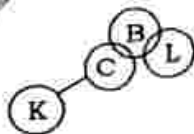
Some caps are beggars.

Conclusions:

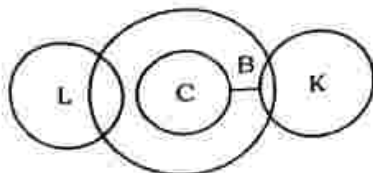
- (I) Some caps are leaders.
- (II) Some beggars are keys.
- (III) Some caps are not leaders.
- (IV) Some beggars are not keys.
- (1) Either I or III and II follow
- (2) Either II or IV and I follow
- (3) Either II or IV and III follow
- (4) Either II or IV and either I or III follow
- (5) Either I or III and IV follow

Cap = C, Beggar = B, Leaders = L, Keys = K

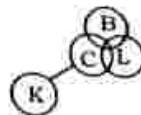
Sol. Step I & II



or



or



Here, conclusion I, II and III are doubtful and conclusion IV is right. Conclusion I is positive and conclusion III is negative and the terms of both the conclusions i.e. 'caps' and 'beggars' are same then conclusion I and III form case of 'either'. So answer will be either I or III and IV follow.

Ans. (5)

Ex. 22: Statement:

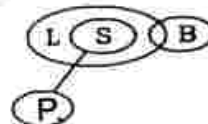
1. Some pads are not symbols.
2. All symbols are letters.
3. Some letters are boxes.

Conclusions:

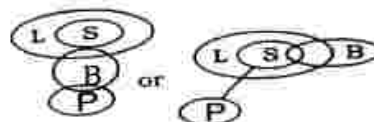
- (I) Some boxes are pads.
- (II) Some pads are not boxes.
- (III) Some pads are not letters.
- (IV) All symbols are boxes.
- (1) Only I follows
- (2) Either I or II follows
- (3) Only IV follows
- (4) Only III follows
- (5) Either I or III follows

Symbol = S, Letter = L, Boxes = B, Pads = P

Sol. Step I & II



or



Here, both conclusions (I) and (II) are doubtful and conclusion (I) is positive and conclusion (II) negative and the terms of both the conclusions i.e. 'boxes' and 'pads' are same then conclusions (I) and (II) form case of 'either'. So answer will be only either (I) or (II) follow. **Ans. (2)**

Exercise:

Directions (1 - 20): In each of the questions below are given two/three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

Give answer:

- (1) if only Conclusion I follows
- (2) if only Conclusion II follows
- (3) if either Conclusion I or II follows
- (4) if neither Conclusion I nor II follows
- (5) if both Conclusions I and II follow

1. **Statements:** Some kites are threads.
No thread is needle.
Conclusions: I. Some kites are needles.
II. No needle is thread.
2. **Statements:** Some books are pens.
All pens are paper.
Conclusions: I. Some papers are books.
II. All books are papers.
3. **Statements:** All chairs are buildings.
All tables are buildings.
Conclusions: I. Some chairs are tables.
II. Some tables are chairs.
4. **Statements:** Some trucks are houses.
Some houses are trains.
Conclusions: I. Some trains are trucks.
II. No train is truck.
5. **Statements:** All flowers are trees.
All trees are fruits.
Conclusions: I. Some fruits are flowers.
II. All flowers are fruits.
6. **Statements:** All pens are roads.
All roads are houses.
Conclusions: I. All houses are pens.
II. Some houses are pens.
7. **Statements:** Some books are bags.
All bags are trees.
Conclusions: I. Some books are trees.
II. Some trees are books.
8. **Statements:** Some windows are doors.
No door is chair.
Conclusions: I. Some windows are chairs.
II. All doors are windows.
9. **Statements:** All forests are tigers.
Some tigers are horses.
Conclusions: I. Some horses are forests.
II. No horse is forest.
10. **Statements:** Some buses are trains.
Some trains are boats.
Conclusions: I. Some trains are buses.
II. Some boats are buses.
11. **Statements:** Some bottles are jungles.
All jungles are birds.
Conclusions: I. Some birds are bottles.
II. All bottles are birds.
12. **Statements:** Some bottles are tables.
Some tables are mirrors.
Conclusions: I. Some mirrors are books.
II. No book is mirror.
13. **Statements:** All roads are water.
Some water is boat.
Conclusions: I. Some boats are roads.
II. All waters are boats.
14. **Statements:** All flowers are trees.
No fruit is tree.
Conclusions: I. No fruit is flower.
II. Some trees are flowers.
15. **Statements:** All pens are chalks.
All chairs are chalks.
Conclusions: I. Some pens are chairs.
II. Some chalks are pens.
16. **Statements:** Some buses are bells.
Some bells are horses.
All trains are horses.
Conclusions: I. Some buses are horses.
II. Some trains are bells.
17. **Statements:** All goats are kites.
All roses are goats.
All kites are bees.
Conclusions: I. Some kites are roses.
II. Some goats are bees.

18. **Statements:** All classes are lions.
Some birds are classes.
All pens are lions.
- Conclusions:** I. No pen is bird.
II. Some birds are pens.

19. **Statements:** Some candles are papers.
All papers are trees.
Some books are papers.
- Conclusions:** I. Some books are candles.
II. Some trees are books.

20. **Statements:** All bats are elephants.
Some balloons are crows.
All crows are bats.
- Conclusions:** I. Some balloons are elephants.
II. Some elephants are crows.

Directions (21 - 34): In each of the questions below are given three statements followed by three conclusions numbered I, II & III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

21. **Statements:** All petals are trees.
All trees are gardens.
All roads are gardens.
- Conclusions:** I. Some roads are trees.
II. Some gardens are trees.
III. Some gardens are petals.

- (1) Only I and II follow
(2) Only II and III follow
(3) Only I and III follow
(4) All I, II and III follow
(5) None of these

22. **Statements:** All keys are locks.
No lock is toy.
All bags are toys.
- Conclusions:** I. No bag is key.
II. Some bags are keys.
III. Some toys are keys.

- (1) None follows

- (2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only I and II follow

23. **Statements:** Some days are nights.
Some nights are months.
Some months are years.
- Conclusions:** I. Some years are nights.
II. Some months are days.
III. No year is night.

- (1) Only I follows
(2) Only II follows
(3) Only III follows
(4) Only either I or III follows
(5) None of these

24. **Statements:** All cycles are tyres.
Some tyres are wheels.
All wheels are buses.
- Conclusions:** I. Some buses are tyres.
II. Some wheels are tyres.
III. Some buses are cycles.

- (1) Only I and II follow
(2) Only I and III follow
(3) Only II and III follow
(4) All I, II and III follow
(5) None of these

25. **Statements:** Some dogs are cats.
Some cats are horses.
All horses are tigers.
- Conclusions:** I. Some tigers are cats.
II. Some horses are dogs.
III. Some tigers are dogs.

- (1) None follows
(2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only II and III follow

26. **Statements:** All ropes are sticks.
Some sticks are hammers.
Some hammers are lakes.
- Conclusions:** I. Some lakes are ropes.
II. Some hammers are ropes.
III. Some lakes are sticks.

- (1) None follows
(2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only I and III follow
27. **Statements:** Some leaves are baskets.
Some baskets are flowers.
Some flowers are lakes.
Conclusions: I. Some lakes are baskets.
II. Some flowers are lakes.
III. No lake is basket.
(1) Only I follows
(2) Only II follows
(3) Only III follows
(4) Only either I or III follows
(5) None of these
28. **Statements:** All pictures are bands.
Some bands are chairs.
Some chairs are tables.
Conclusions: I. Some tables are bands.
II. Some chairs are pictures.
III. Some tables are pictures.
(1) None follows
(2) Only I follows
(3) Only II follows
(4) Only I and II follow
(5) Only III follows
29. **Statements:** Some bikes are cars.
Some cars are trains.
Some trains are buses.
Conclusions: I. Some buses are cars.
II. Some trains are bikes.
III. Some buses are bikes.
(1) None follows
(2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only I and II follow
30. **Statements:** All dogs are cats.
Some cats are rats.
All rats are mats.
Conclusions: I. Some mats are cats.
II. Some mats are dogs.
III. Some rats are cats.
(1) Only I follows
(2) Only II follows
(3) Only III follows
(4) Only I and III follow
(5) None of these
31. **Statements:** All cups are benches.
Some benches are drums.
All drums are kites.
Conclusions: I. Some kites are cups.
II. Some kites are benches.
III. Some drums are cups.
(1) None follows
(2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only II and III follow
32. **Statements:** Some boxes are walls.
No wall is road.
All roads are rivers.
Conclusions: I. Some rivers are walls.
II. Some roads are boxes.
III. No wall is river.
(1) Only I follows
(2) Only either I or III follows
(3) Only III follows
(4) Only II follows
(5) Only II and III follow
33. **Statements:** Some tables are chairs.
All chairs are houses.
All houses are tents.
Conclusions: I. All houses are chairs.
II. Some tents are chairs.
III. Some houses are tables.
(1) Only I and II follow
(2) Only I and III follow
(3) Only II and III follow
(4) All I, II and III follow
(5) None of these
34. **Statements:** All pens are sticks.
All sticks are rings.
All rings are rods.
Conclusions: I. Some rings are pens.
II. Some rods are sticks.
III. Some rods are pens.
(1) Only I and II follow
(2) Only I and III follow
(3) Only II and III follow
(4) All I, II and III follow
(5) None of these

Directions (35 - 39): In each of the questions below are given three statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

35. **Statements:** All flowers are rooms.
Some rooms are windows.
All cards are windows.

Conclusions: I. Some cards are flowers.
II. Some cards are rooms.
III. Some windows are flowers.
IV. All cards are rooms.

- (1) None follows
(2) Only II follows
(3) Only I follows
(4) Only III follows
(5) Only IV follows

36. **Statements:** All males are wolves.
All owls are males.
All parrots are owls.

Conclusions: I. All wolves are owls.
II. All owls are wolves.
III. All parrots are wolves.
IV. All parrots are males.

- (1) All follow
(2) Only III and IV follow
(3) Only II and III follow
(4) Only II, III and IV follow
(5) None of these

37. **Statements:** Some leaves are skies.
All skies are clouds.
No cloud is a boat.

Conclusions: I. Some boats are leaves.
II. Some clouds are leaves.
III. All skies are leaves.
IV. No leaf is a boat.

- (1) Only I, II and IV follow
(2) Only II, III and IV follow
(3) Either I or IV and II follow

- (4) Either I or IV and III follow
(5) None of these

38. **Statements:** No building is white.
All whites are oranges.
Some oranges are water.

Conclusions: I. No building is water.
II. No orange is building.
III. Some oranges are whites.
IV. Some water is building.

- (1) Either I or IV and II follow
(2) Either I or IV and III follow
(3) Either I or IV follows
(4) None follows
(5) Either I or IV and II and III follow

39. **Statements:** Some mangoes are apples.
Some bananas are apples.
Some branches are bananas.

Conclusions: I. Some mangoes are bananas.
II. Some branches are apples.
III. Some branches are mangoes.
IV. All apples are mangoes.

- (1) None follows
(2) Only I and II follow
(3) Only III and IV follow
(4) Only I and IV follow
(5) All follow

Directions (40 - 50): In each of the questions below are given four statements followed by three conclusions numbered I, II, and III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

40. **Statements:** Some nails are plates.
Some plates are disks.
All disks are mirrors.
All mirrors are tyres.

Conclusions: I. Some tyres are plates.
II. Some tyres are nails.
III. Some mirrors are plates.

- (1) Only I and II follow
(2) Only I and III follow
(3) Only II and III follow
(4) All I, II and III follow
(5) None of these
41. **Statements:** Some windows are lakes.
Some lakes are forests.
Some forests are hills.
All hills are curtains.
- Conclusions:** I. Some hills are windows.
II. Some curtains are lakes.
III. Some forests are windows.
- (1) None follows
(2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only I and III follow
42. **Statements:** All tapes are branches.
Some branches are roads.
All roads are fruits.
Some fruits are trees.
- Conclusions:** I. Some trees are tapes.
II. Some fruits are tapes.
III. Some fruits are branches.
- (1) None follows
(2) Only I follows
(3) Only II follows
(4) Only III follows
(5) Only II and III follow
43. **Statements:** Some pearls are chairs.
All chairs are trucks.
Some trucks are bricks.
All bricks are cars.
- Conclusions:** I. Some cars are chairs.
II. Some cars are trucks.
III. Some trucks are pearls.
- (1) Only I and II follow
(2) Only I and III follow
(3) Only II and III follow
(4) All I, II and III follow
(5) None of these
44. **Statements:** Some flowers are houses.
All houses are tigers.
- All tigers are goats.
Some goats are bullocks.
- Conclusions:** I. Some goats are flowers.
II. Some tigers are flowers.
III. Some bullocks are tigers.
- (1) Only I and II follow
(2) Only II and III follow
(3) Only I and III follow
(4) All I, II and III follow
(5) None of these
45. **Statements:** All cars are jeeps.
All jeeps are buses.
All buses are trucks.
Some trucks are pens.
- Conclusions:** I. All trucks are buses.
II. All buses are jeeps.
III. All jeeps are cars.
- (1) None follows
(2) All follows
(3) Only III and I follow
(4) Only III follows
(5) None of these
46. **Statements:** Some skies are rains.
Some rains are stars.
All stars are planets.
All planets are clouds.
- Conclusions:** I. Some clouds are rains.
II. Some planets are skies.
III. Some planets are rains.
- (1) Only I and II follow
(2) Only I and III follow
(3) Only II and III follow
(4) All I, II and III follow
(5) None of these
47. **Statements:** Some books are pens.
Some pens are watches.
All watches are books.
Some books are windows.
- Conclusions:** I. Some books are watches.
II. Some books are not pens.
III. Some watches are not books.

- (1) All follow
 (2) Only I and III follow
 (3) Only I and II follow
 (4) Only II and III follow
 (5) None of these

48. **Statements:** All spoons are bowls.
 All bowls are pans.
 All pans are sticks.
 All sticks are knives.

Conclusions: I. Some knives are pans.
 II. Some sticks are bowls.
 III. Some pans are spoons.

- (1) Only I and II follow
 (2) Only II and III follow
 (3) Only I and III follow
 (4) All I, II and III follow
 (5) None of these

49. **Statements:** All threads are walls.
 All lamps are walls.
 Some kites are lamps.
 Some lamps are rays.

Conclusions: I. Some kites are threads.
 II. Some kites are walls.
 III. Some lamps are threads.

- (1) None follows
 (2) Only I follows
 (3) Only II follows
 (4) Only III follows
 (5) Only I and III follow

50. **Statements:** Some tables are chairs.
 Some chairs are wheels.
 Some wheels are boards.
 Some boards are chalks.
- Conclusions:** I. Some chalks are wheels.
 II. Some boards are chairs.
 III. Some wheels are tables.

- (1) None follows
 (2) Only I follows
 (3) Only II follows
 (4) Only III follows
 (5) Only II and III follow

Answers with explanation:

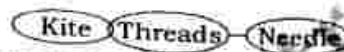
Note : The signs with their relevant meaning are given below :

✓ = True (follow)

× = False (does not follow)

- = may or may not true (does not follow)

1. 2;



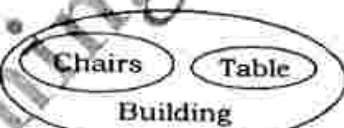
Conclusion: I -
 II ✓

2. 1;



Conclusion: I ✓
 II -

3. 4;



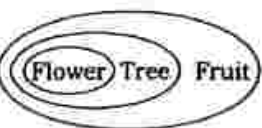
Conclusion: I -
 II -

4. 3;



Conclusion: I -
 II - or

5. 5;



Conclusion: I ✓
 II ✓

6. 2;

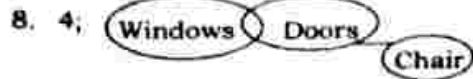


Conclusion: I -
 II ✓

7. 5;



Conclusion: I ✓
 II ✓



Conclusion: I -
II -



Conclusion: I -
II - or



Conclusion: I ✓
II -



Conclusion: I ✓
II -



Conclusion: I -
II - or



Conclusion: I -
II -



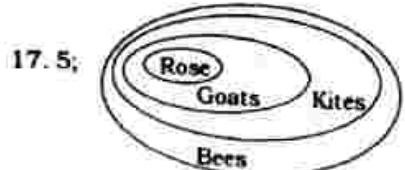
Conclusion: I



Conclusion: I -
II ✓



Conclusion: I -
II -



Conclusion: I ✓
II ✓



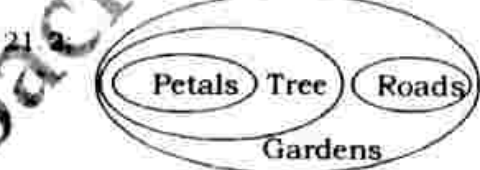
Conclusion: I -
II - or



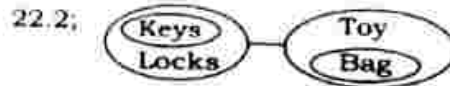
Conclusion: I -
II ✓



Conclusion: I ✓
II ✓



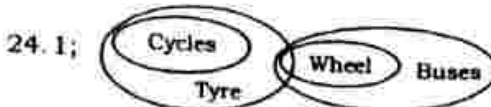
Conclusion: I -
II ✓
II ✓



Conclusion: I ✓
II ×
II ×



Conclusion: I -
II - or
III -



Conclusion: I ✓
II ✓
III -



Conclusion: I ✓
II -
III -

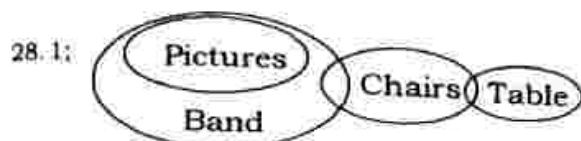


Conclusion: I -
II -
III -

27.5; Only either I or III and II follow.



Conclusion: I -
II ✓ or
III -



Conclusion: I -
II -
III -



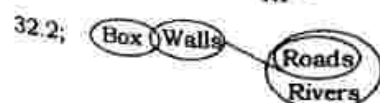
Conclusion: I -
II -
III -



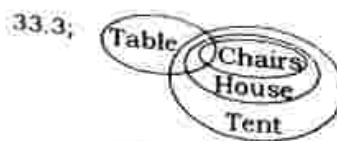
Conclusion: I ✓
II -
III ✓



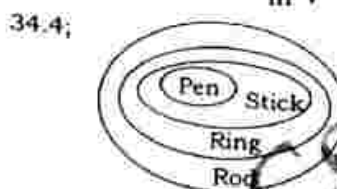
Conclusion: I -
II ✓
III -



Conclusion: I -
II - or
III -



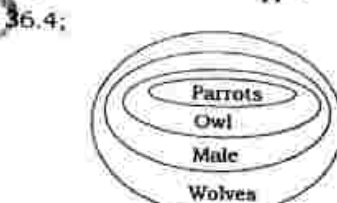
Conclusion: I -
II ✓
III ✓



Conclusion: I -
II ✓
III ✓



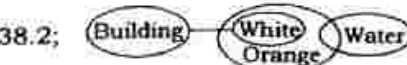
Conclusion: I -
II -
III -
IV -



Conclusion: I -
II ✓
III ✓
IV ✓



Conclusion: I -
II ✓ or
III -
IV -



Conclusion: I -
II - or
III ✓
IV -

39.1; Mango Apple Bananas Branches

Conclusion: I -
II -
III -
IV -

40.2; Nails Plates Disk Mirror Tyre

Conclusion: I ✓
II -
III ✓

41.1; Windows Lake Forest Hills Curtain

Conclusion: I -
II -
III -

42.4; Tape Roads Fruit Branches Tree

Conclusion: I -
II -
III ✓

43.3; Pearl Chairs Bricks Cars Truck

Conclusion: I -
II ✓
III

44.1; Flower House Horn Bullock

Conclusion: I ✓
II ✓
III -

45.1; Car Jeep Bus Truck Pen

Conclusion: I -
II -

III -

46.2; Sky Rain Stars Planet Cloud

Conclusion: I ✓
II -
III ✓

47.5; Only I follows.

Pen Watches Books Windows

Conclusion: I -
II -
III x

48.4; Spoon Bowls Pen Sticks Knife

Conclusion: I ✓
II ✓
III ✓

49.3; Kit Lamp Rays Walls Threads

Conclusion: I -
II ✓
III -

50.1; Table Chairs Wheels Board Chalk

Conclusion: I -
II -
III -

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Contents

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MATRIX

Directions (Question Nos. 1 to 8): A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternative are represented by two classes of alphabets as in the 2 matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II from 5 to 9. A letter from these matrices can be represented first by its row and next by column number. For eg. (in question no. 1) B can be represented by 11, 30 etc. U can be represented by 55, 89 etc.

1. Identify the set for the word **PHSH**.

MATRIX-I					MATRIX-II				
0	M	L	F	H	B	5	S	O	S
1	H	B	M	L	F	6	U	N	I
2	L	F	H	B	M	7	K	S	U
3	B	M	L	F	H	8	S	N	I
4	F	H	B	M	L	9	S	U	N

- (A) 22, 81, 14, 69 (B) 33, 86, 88, 41
(C) 33, 88, 67, 22 (D) 02, 67, 34, 88

2. Identify the set for the word **MILK**.

MATRIX-I					MATRIX-II				
0	M	L	F	H	B	5	S	O	S
1	H	B	M	L	F	6	U	N	I
2	L	F	H	B	M	7	K	S	U
3	B	M	L	F	H	8	S	N	I
4	F	H	B	M	L	9	S	U	N

- (A) 12, 67, 32, 99 (B) 31, 86, 33, 87
(C) 21, 76, 32, 95 (D) 10, 67, 42, 88

3. Identify the set for the word **NIFE**.

MATRIX-I					MATRIX-II				
0	E	F	G	H	I	5	L	M	N
1	H	I	E	F	G	6	O	P	L
2	F	G	H	I	E	7	M	N	O
3	L	E	S	G	H	8	P	L	M
4	G	H	I	E	F	9	N	O	P

- (A) 95, 30, 32, 43 (B) 95, 30, 31, 43
(C) 57, 42, 31, 43 (D) 57, 41, 32, 43

4. Identify the set for the word **PEN**.

MATRIX-I					MATRIX-II				
0	E	F	G	H	I	5	L	M	N
1	H	I	E	F	G	6	O	P	L
2	F	G	H	I	E	7	M	N	O
3	L	E	S	G	H	8	P	L	M
4	G	H	I	E	F	9	N	O	P

- (A) 66, 39, 95 (B) 85, 00, 95
(C) 86, 00, 95 (D) 65, 00, 95

5. Identify the set for the word **DOOR**.

MATRIX-I					MATRIX-II				
0	E	O	M	S	K	5	A	T	D
1	S	R	F	O	M	6	I	P	A
2	O	M	S	R	F	7	T	D	I
3	R	F	O	M	S	8	P	A	T
4	M	S	R	F	O	9	D	I	P

- (A) 69, 44, 20, 43 (B) 76, 01, 44, 24
(C) 95, 20, 44, 12 (D) 57, 13, 32, 23

6. Identify the set for the word **PUSH**.

MATRIX-I				MATRIX-II			
0	A	D	G	4	R	U	B
1	P	S	V	5	N	W	J
2	C	F	I	6	T	K	S
3	T	L	E	7	I	H	A

- (A) 10, 66, 45, 03 (B) 30, 11, 54, 10
(C) 10, 45, 66, 75 (D) 01, 54, 66, 57

7. Identify the set for the word **MEAL**.

MATRIX-I				MATRIX-II			
0	A	M	T	4	E	B	L
1	T	I	A	5	L	U	E
2	I	A	M	6	U	E	B
3	M	T	I	7	B	L	U

- (A) 13, 44, 23, 46 (B) 22, 64, 54, 65
(C) 30, 56, 21, 67 (D) 01, 65, 12, 31

8. Identify the set for the word GUIDE.

MATRIX-I

	0	1	2	3	4
0	I	E	A	O	U
1	A	O	U	I	E
2	E	I	O	U	A
3	O	U	E	A	I
4	U	A	I	E	O

MATRIX-II

	5	6	7	8	9
5	F	D	H	G	H
6	B	G	H	F	D
7	D	F	G	H	H
8	G	H	D	B	F
9	H	B	F	G	D

- (A) 85, 23, 21, 87, 32
(B) 58, 31, 12, 57, 41
(C) 77, 13, 42, 99, 32
(D) 66, 31, 43, 78, 14

Direction (Question nos. 9 to 10) : Identify the set for the word given in each question.

MATRIX-I

	0	1	2	3	4
0	F	O	M	S	R
1	S	R	F	O	M
2	O	M	S	R	F
3	R	F	O	M	S
4	M	S	R	F	O

MATRIX-II

	5	6	7	8	9
5	A	T	D	I	P
6	I	P	A	T	D
7	T	D	I	P	A
8	P	A	T	D	I
9	D	I	P	A	T

9. FARM
(A) 00, 98, 23, 34 (B) 12, 67, 04, 34
(C) 43, 67, 11, 33 (D) 24, 67, 11, 41
10. SOAP
(A) 10, 13, 67, 58 (B) 22, 01, 55, 66
(C) 34, 32, 79, 76 (D) 41, 44, 98, 99

Direction (Question nos. 11 to 15) : Identify the set for the word given in each question.

MATRIX-I

	0	1	2	3	4
0	A	R	S	N	C
1	N	C	A	R	S
2	S	N	C	A	R
3	R	S	N	C	A
4	C	A	R	S	N

MATRIX-II

	5	6	7	8	9
5	O	E	L	P	T
6	T	O	E	L	P
7	P	T	O	E	L
8	L	P	T	O	E
9	E	L	P	T	O

11. PAST
(A) 75, 21, 14, 65 (B) 86, 12, 31, 76
(C) 58, 41, 12, 67 (D) 88, 77, 41, 67
12. RATE
(A) 13, 12, 98, 67 (B) 42, 23, 56, 76
(C) 30, 14, 95, 89 (D) 24, 43, 89, 95
13. POET
(A) 69, 88, 67, 65 (B) 75, 55, 65, 67
(C) 77, 88, 98, 78 (D) 75, 66, 76, 78
14. NEST
(A) 32, 56, 20, 89 (B) 10, 65, 41, 76
(C) 32, 76, 34, 98 (D) 21, 67, 14, 59
15. PEST
(A) 97, 89, 34, 59 (B) 58, 67, 43, 98
(C) 57, 59, 31, 98 (D) 68, 95, 31, 76
16. Find the correct set of pairs of letters for the number given with the help of the two given matrices.

Given Number : 2468

MATRIX-I

	A	B	C	D	E
A	1	2	3	4	5
B	4	1	2	3	5
C	3	2	5	1	4
D	5	4	1	2	3
E	3	1	4	5	2

MATRIX-II

	P	Q	R	S	T
P	0	6	7	8	9
Q	9	8	6	7	0
R	0	7	9	8	6
S	8	9	0	6	7
T	6	0	7	9	8

- (A) AB, DD, RT, PQ (B) CB, CE, SS, QQ
(C) DD, CB, PQ, RS (D) EE, AB, TP, TT

ANSWERS

1. (B) The numerical groups of FISH will be —

F = 02, 14, 21, **33**, 40

I = 55, 67, 79, **86**, 98

S = 57, 69, 76, **88**, 95

H = 03, 10, 22, 34, **41**

2. (A) The numerical groups of MILK will be —

M = 00, **12**, 24, 31, 43

I = 55, **67**, 79, 86, 98

L = 01, 13, 20, **32**, 44

K = 56, 68, 75, 87, **99**

3. (A) The numerical group of NIFE will be

N = 57, 69, 76, 88, **95**

I = 04, 11, 23, **30**, 42

F = 01, 13, 20, **32**, 44

E = 00, 12, 24, 31, **43**

4. (B) The numerical groups of PEN will be

P = 59, 66, 78, **85**, 97

E = **00**, 12, 24, 31, 43

N = 57, 69, 76, 88, **95**

5. (B) The numerical groups of DOOL will be

D = **57**, 69, 76, 88, 95

O = 01, **13**, 20, 32, 44

O = 01, 13, 20, **32**, 44

L = 04, 11, **23**, 30, 42

6. (C) The numerical value of P U S H Will be—

P = 10

U = 45

S = 66

H = 75

7. (C) The numerical groups of MEAL will be

M = 01, 13, 22, **30**

E = 44, **56**, 65, 77

A = 00, 12, **21**, 33

L = 46, 54, **67**, 75

8. (A) The numerical groups of GUIDE will be—

G = 58, 66, 77, **85**, 98

U = 04, 12, **23**, 31, 40

I = 00, 13, **21**, 34, 42

D = 56, 69, 75, **87**, 99

E = 01, 14, 20, **32**, 43

9. (C) The numerical groups of FARM will be—

F = 00, 12, 24, 31, **43**

A = 55, **67**, 79, 86, 98

R = 04, **11**, 23, 30, 42

M = 02, 14, 21, **33**, 40

10. (B) The numerical groups of SOAP will be—

S = 03, 10, **22**, 34, 41

O = **01**, 13, 20, 32, 44

A = **55**, 67, 79, 86, 98

P = 59, **66**, 78, 85, 97

11-15: The numerical groups of all the letters will be—

A = 00, 12, 23, 34, 41

R = 01, 13, 24, 30, 42

S = 02, 14, 20, 31, 43

N = 03, 10, 21, 32, 44

C = 04, 11, 22, 33, 40

O = 55, 66, 77, 88, 99

E = 56, 67, 78, 89, 95

L = 57, 68, 79, 85, 96

P = 58, 69, 75, 86, 97

T = 59, 65, 76, 87, 98

11. (B) 86, 12, 31, 76

12. (A) 13, 12, 98, 67

13. (A) 69, 88, 67, 65

14. (D) 21, 67, 14, 52

15. (B) 58, 67, 43, 98

16. (B) The alphabetical groups of all the numbers will be—

2 = AB, BC, **CB**, DD, EE

4 = AD, BA, **CE**, DB, EC

6 = PQ, QR, RT, **SS**, TP

8 = PS, **QQ**, RS, SP, TT

ANALOGY TEST (TYPE - I)

Directions: In questions given below, select the number from the given alternatives.

1. 2 : 7 :: 6 : ?
(A) 40 (B) 39
(C) 50 (D) 72
2. 7 : 17 :: 2 : 50
(A) 23 (B) 26
(C) 124 (D) 126
3. 1 : 8 :: 27 : ?
(A) 37 (B) 47
(C) 57 (D) 64
4. 4 : 17 :: 7 : ?
(A) 48 (B) 49
(C) 50 (D) 51
5. 3 : 27 :: 7 : ?
(A) 21 (B) 42
(C) 147 (D) 343
6. 9 : 28 :: 56 : ?
(A) 3 (B) 18
(C) 112 (D) 169
7. 6 : 2 :: 8 : ?
(A) 1 (B) 3
(C) 7 (D) 5
8. 1 : 8 :: 4 : ?
(A) 64 (B) 512
(C) 128 (D) 32
9. 8 : 12 :: 6 : ?
(A) 8 (B) 11
(C) 5 (D) 9
10. 21 : 3 :: 574 : ?
(A) 23 (B) 82
(C) 97 (D) 113
11. 63 : 9 :: 2 : 14
(A) 68 (B) 42
(C) 96 (D) 56
12. 16 : 4 :: 9 : ?
(A) 4 (B) 25
(C) 1 (D) 2
13. 27 : ? :: 125 : 25
(A) 3 (B) 9
(C) 18 (D) 125
14. 625 : 25 :: 225 : ?
(A) 13 (B) 14
(C) 15 (D) 16
15. 384 : 24 :: 216 : 63
(A) 128 (B) 124
(C) 113 (D) 192
16. 365 : 90 :: 623 : ?
(A) 36 (B) 45
(C) 123 (D) 63
17. 248 : 3 :: 328 : ?
(A) 7 (B) 5
(C) 4 (D) 6
18. 6 : 222 :: 7 : ?
(A) 350 (B) 343
(C) 336 (D) 210
19. 72 : 18 :: 56 : ?
(A) 24 (B) 22
(C) 20 (D) 16
20. 16 : 56 :: 32 : ?
(A) 96 (B) 112
(C) 120 (D) 128
21. 24 : 27 :: ? : 81
(A) 8 (B) 62
(C) 72 (D) 82
22. 47 : 65 :: 59 : ?
(A) 95 (B) 110
(C) 106 (D) 118
23. 83 : 25 :: 39 : ?
(A) 25 (B) 16
(C) 49 (D) 36
24. 13 : 24 :: ? : ?
(A) 45 : 79 (B) 56 : 78
(C) 35 : 59 (D) 57 : 68
25. 12 : 35 :: 16 : ?
(A) 78 (B) 32
(C) 55 (D) 63
26. 18 : 30 :: 36 : ?
(A) 64 (B) 66
(C) 54 (D) 62
27. 42 : 56 :: 132 : ?
(A) 156 (B) 145
(C) 110 (D) 240
28. 19 : 37 :: 26 : ?
(A) 52 (B) 51
(C) 46 (D) 43
29. 940 : 5 :: 376 : ?
(A) 3 (B) 2
(C) 6 (D) 5
30. 24 : 126 :: 48 : ?
(A) 433 (B) 192
(C) 240 (D) 344

31. $10 : 101 :: 20 : ?$
 (A) 200 (B) 201
 (C) 400 (D) 402
32. $25 : 125 :: ? : 3125$
 (A) 525 (B) 625
 (C) 725 (D) 825
33. $212 : 436 :: 560 : ?$
 (A) 786 (B) 682
 (C) 784 (D) 688
34. $435 : 768 :: 324 : ?$
 (A) 657 (B) 567
 (C) 765 (D) 675
35. $204 : 1428 :: ? : 637$
 (A) 81 (B) 85
 (C) 91 (D) 95
36. $0.16 : 0.0016 :: 1.02 : ?$
 (A) 10.20 (B) 0.102
 (C) 0.0102 (D) 1.020
37. $196 : 169 :: 81 : ?$
 (A) 64 (B) 72
 (C) 100 (D) 144
38. $C : 16 :: F : ?$
 (A) 30 (B) 40
 (C) 49 (D) 50
39. $MO : 46 :: HJ : ?$
 (A) 86 (B) 87
 (C) 81 (D) 79
40. $987 : IHG :: 654 : ?$
 (A) FDE (B) FED
 (C) EFD (D) DEF
41. $M \times N : 13 \times 14 :: F \times R : ?$
 (A) 14×15 (B) 5×17
 (C) 6×18 (D) 7×19
42. $L \times M : 12 \times 13 :: U \times W : ?$
 (A) 21×22 (B) 24×26
 (C) 9×11 (D) 21×23
43. $1648 : 1339 :: 2266 : ?$
 (A) 1234 (B) 2133
 (C) 1442 (D) 1551
44. $7 : 49 : 36 :: 14 : 196 : 210 :: ?$
 (A) $9 : 81 : 91$ (B) $12 : 140 : 156$
 (C) $21 : 441 : 462$ (D) $21 : 440 : 461$
45. $11 : 121 : 110 :: 15 : 225 : 210 :: ?$
 (A) $9 : 81 : 70$ (B) $19 : 361 : 342$
 (C) $17 : 288 : 272$ (D) $16 : 255 : 239$
46. $2, 4, 2 : 4, 16, 4 :: 1, 1, 1 : ?$
 (A) 2, 4, 2 (B) 1, 1, 1
 (C) 2, 2, 2 (D) 2, 13, 2
47. $4, 16, 4 : 2, 4, 2 :: ? : 3, 9, 3$
 (A) 6, 9, 6 (B) 9, 81, 9
 (C) 9, 27, 9 (D) 9, 18, 9

ANSWERS

1. (B) $2 : 7 :: 6 : 39$
 $(2^2 + 3) \rightarrow (6^2 + 3)$
2. (A) $7 : 17 :: 23 : 50$
 $(7 \times 2 + 3) \rightarrow (23 \times 2 + 4)$
3. (D) $1 : 8 :: 27 : 64$
 $(1)^3 : (2)^3 :: (3)^3 : (4)^3$
4. (C) $4 : 17 :: 7 : 50$
 $(4^2 + 1) \rightarrow (7^2 + 1)$
5. (D) $3 : 27 :: 7 : 343$
 $(3)^3 : (7)^3$
6. (D) $9 : 28 :: 56 : 169$
 $(1 \times 3 + 1) \rightarrow (1 \times 3 + 1)$
7. (B) $6 : 2 :: 8 : 3$
 $(6 \div 2) - 1 = 2 \quad (8 \div 2) - 1 = 3$
8. (B) $1 : 8 :: 4 : 512$
 $(1)^3 \times 8 = 8 \quad (4)^3 \times 8 = 512$
9. (D) $8 \times 1.5 = 12$
 Similarly, $6 \times 1.5 = 9$
10. (B) $21 : 3 :: 574 : 82$
 $(\div 7) \rightarrow (\div 7)$
11. (A) $63 : 9 :: 68 : 14$
 $6 + 3 = 9 \quad 6 + 8 = 14$
12. (C) $16 : 4 :: 9 : 1$
 $(4)^2 : (2)^2 :: (3)^2 : (1)^2$
13. (B) $27 : 9 :: 125 : 25$
 $(3)^3 : (3)^2 :: (5)^3 : (5)^2$
14. (C) $625 : 25 :: 225 : 15$
 $\sqrt{625} : \sqrt{225}$
15. (C)
16. (A) $3 \times 6 \times 5 = 90$
 Similarly, $6 \times 2 \times 3 = 36$

17. (C) $24 : 8 :: 3 : 4$
 $(\div 3) \rightarrow (\div 3)$
18. (A) $6 : 222 :: 7 : 350$
 $(6)^3 + 6 \rightarrow (7)^3 + 7$
19. (B); $7 + 2 = 9, 9 \times 2 = 18$
 So, $5 + 6 = 11, 11 \times 2 = 22$
20. (B) $16 : 56 :: 32 : 112$
 $(16 \times 3) + (16 \div 2) \rightarrow (32 \times 3) + (32 \div 2)$
21. (C) $24 : 27 :: 72 : 81$
 $\times 3 \rightarrow \times 3$
22. (C) $4 : 7 :: 5 : 9$
 $4^2 + 7^2 \rightarrow 5^2 + 9^2$
23. (D) $8 - 3 \Rightarrow 5 \Rightarrow 5^2 = 25$
 Similarly, $9 - 3 \Rightarrow 6 \Rightarrow 6^2 = 36$
24. (D) $13 : 24 :: 57 : 68$
 $+11 \rightarrow +11$
25. (D) $12 : 35 :: 16 : 63$
 $(\times 3 - 1) \rightarrow (\times 4 - 1)$
26. (B) $18 : 30 :: 36 : 66$
 $(\times 2 - 6) \rightarrow (\times 2 - 6)$
- $\frac{51}{5000} = \frac{51}{50} \times \frac{5000}{51} = 100$
27. (A) $42 : 56 :: 132 : 156$
 $(7 \div 7) (8 \div 8) (12 \div 12) (13 \div 13)$
28. (B) $19 : 37 :: 26 : 51$
 $(19 \div 2 - 1) \rightarrow (26 \div 2 - 1)$
29. (B) $940 \div 5 = 188$
 Similarly
 $376 \div x = 188$
 $x = 376 \div 188$
 $\therefore x = 2$
30. (D) $24 : 126 :: 48 : 344$
 $(5)^2 - 1 : (5)^3 + 1 :: (7)^2 - 1 : (7)^3 + 1$

31. (B) $10 : 101 :: 20 : 201$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $10 \times 10 + 1 \quad 20 \times 10 + 1$

32. (B) $25 \times 125 = 625 : 3125$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $\times 5 \quad \times 5$

33. (C) The difference of $436 - 212 = 224$
 So, $560 + 224 = 784$

34. (A) $435 : 768 :: 324 : 657$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $+333 \quad +333$

35. (C) $204 : 1428 :: 91 : 637$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $1428 \div 7 \quad 637 \div 7$

36. (C) $0.16 \Rightarrow \frac{0.16}{100} = 0.0016$

Similarly, $1.02 \Rightarrow \frac{1.02}{100} = 0.0102$

37. (A) $196 : 169 :: 81 : 64$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $(14)^2 \quad (13)^2 \quad (9)^2 \quad (8)^2$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $-1 \quad -1 \quad -1 \quad -1$

38. (C) $C : 16 :: F : 49$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $(4)^2 \quad (4)^2 \quad (7)^2 \quad (7)^2$
 Square Square Square Square

39. (C) $M : O :: H : I$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $13 \quad 15 \quad 8 \quad 10$
 $(1 \times 3 = 4) \quad (1 \times 5 = 6) \quad (1 \times 8 = 8) \quad (1 \times 10 = 10)$

40. (B) According to English Alphabet the ranking value of I = 9, H = 8 and G = 7. Similarly, the ranking value of 654 will be F = 6, E = 5 and D = 4.

41. (C) $M \times N : 13 \times 14 :: P \times R : 6 \times 18$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 place value place value place value place value

42. (B) $L \times M : 12 \times 13 :: W : 21 \times 23$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 place value place value place value place value

43. (C) $16 : 48 :: 13 : 39 :: 22 : 66 :: 14 : 42$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $\times 3 \quad \times 3 \quad \times 3 \quad \times 3$

44. (C) $7 \times 7 = 49$ and $14 \times 14 = 196$
 $7 \times 8 = 56$ and $14 \times 15 = 210$
 Similarly,
 $21 \times 21 = 441$
 $21 \times 22 = 462$

45. (B) $11 : 121 :: 15 : 225 :: 10 : 100$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $(11 \times 11) \quad (15 \times 15) \quad (10 \times 10)$

$19 : 361 :: 19 : 342$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $(19 \times 19) \quad (19 \times 19)$

46. (B) $2 : 4 :: 16 : 4 :: 1 : 1 :: 1 : 1 :: 1 : 1$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 Square Square Square Square Square Square Square Square

47. (B) $4 : 16 :: 2 : 4 :: 9 : 81 :: 3 : 9 :: 2 : 4$
 $\downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow \quad \downarrow \quad \uparrow$
 $2 \times 2 \quad 2 \times 2 \quad 3 \times 3 \quad 3 \times 3 \quad 2 \times 2$

ANALOGY TEST (TYPE - II)

Directions: In questions given below, select the word from the given alternatives.

1. Sleep : Rest :: Play : ?
(A) Enjoyment (B) Learning
(C) Injury (D) Champion
2. FOX : CUNNING :: RABBIT : ?
(A) Courageous (B) Dangerous
(C) Timid (D) Ferocious
3. FLEXIBLE : RIGID :: CONFIDENCE : ?
(A) DIFFIDENCE (B) INDIFFERENCE
(C) COWARDICE (D) SCARE
4. Grain : Warehouse :: Water : ?
(A) Drink (B) Dam
(C) Canal (D) River
5. DOCTOR : PATIENT :: LAWYER : ?
(A) CUSTOMER (B) CLIENT
(C) CONSUMER (D) BUYER
6. Encouragement : Victory :: Frustration : ?
(A) Stalemate (B) Anger
(C) Failure (D) Anxiety
7. Dog : Canine :: Horse : ?
(A) Grass (B) Race
(C) Hoof (D) Transport
8. Book : Publisher : Film : ?
(A) Writer (B) Editor
(C) Producer (D) Director
9. MAN : BIOGRAPHY :: NATION : ?
(A) PEOPLE (B) POPULATION
(C) GEOGRAPHY (D) HISTORY
10. Carrot : Root :: Apple : ?
(A) Plant (B) Fruit
(C) Flower (D) Seed
11. PIGEON : PEACE :: ?
(A) CROWN : HEAD
(B) WHITE FLAG : SURRENDER
(C) LAURELS : VICTORY
(D) WAR : LIBERTY
12. Sculptor : Chisel :: Author : ?
(A) Table (B) Paper
(C) Book (D) Pen
13. BOOK : BOOKCASE :: CLOTHES : ?
(A) RACK
(B) PRESS
(C) WARDROBE
(D) NAPHTHALENE BALLS
14. Safe : Secure :: Protect : ?
(A) guard (B) lock
(C) sure (D) conserve
15. Physician : Treatment :: Judge : ?
(A) Punishment (B) Judgement
(C) Lawyer (D) Court
16. SORROW : CRY :: MIRTH : ?
(A) JOY (B) LAUGHTER
(C) CROWN (D) WEEP
17. Love : Hate :: Proud : ?
(A) Sorrowful (B) Miserable
(C) Humble (D) Conceited
18. Yesterday : Tomorrow :: March : ?
(A) April (B) May
(C) January (D) June
19. FOX : CUNNING :: RABBIT : ?
(A) Courageous (B) Dangerous
(C) Timid (D) Ferocious
20. FLEXIBLE : RIGID :: CONFIDENCE : ?
(A) DIFFIDENCE (B) INDIFFERENCE
(C) COWARDICE (D) SCARE
21. Poet : Poem :: Dramatist : ?
(A) Dialogue (B) Stage
(C) Play (D) Direction
22. Book : Publisher : Film : ?
(A) Writer (B) Editor
(C) Director (D) Producer
23. Surplus : Scarcity :: Simple : ?
(A) Easy (B) Complex
(C) Tactful (D) Polite
24. Hot : Cold :: ?
(A) Summer : Sun (B) Germs : Disease
(C) Light : Dark (D) Thin : Big
25. Love : Hate :: Friend : ?
(A) Trustful (B) Companion
(C) Adorer (D) Enemy
26. Poverty : Unemployment :: Anaemia : ?
(A) Malnutrition (B) Illiteracy
(C) Drought (D) Death
27. Encourage : Restrict :: ?
(A) gain : success (B) dearth : surplus
(C) seeing : believing (D) heart : soul
28. Life : Death :: Hope : ?
(A) Weep (B) Pain
(C) Despair (D) Sadness

29. Christian : Muslim :: ? : Quran
(A) Geeta (B) Ramayan
(C) Angel (D) Bible
30. Large : Enormous :: ?
(A) Cat : Tiger (B) Warmth : Frost
(C) Plump : Fat (D) Royal : Regale
31. Detective : Informer :: Reporter : ?
(A) Source (B) Editorial
(C) News (D) Essay
32. Genuine : Authentic :: Mirage : ?
(A) Illusion (B) Image
(C) Hideout (D) Reflection
33. Thunder : Rain :: ? : Night
(A) Day (B) Dusk
(C) Dark (D) Evening
34. Dream : Reality :: Falsehood : ?
(A) Untruth (B) Truth
(C) Fairness (D) Correctness
35. Pound : Yen :: Polo : ?
(A) Hockey (B) Horse
(C) Ride (D) Stick
36. Camera : Lens :: Flash : ?
(A) Bulb (B) Night
(C) Light (D) Shutter
37. House : Rent :: Capital : ?
(A) Interest (B) Investment
(C) Country (D) Money
38. Today : Day before yesterday :: January : ?
(A) December (B) February
(C) November (D) March
39. Defy : Obey :: Rest : ?
(A) Lazy (B) Idle
(C) Labour (D) Work
40. Patient : Doctor :: ?
(A) Student : Advisor (B) Scissor : Iron
(C) Apple : Knife
(D) Nurse : Surgeon
41. Man : House :: ?
(A) Cat : Mouse (B) Beast : Den
(C) Tree : Plant (D) Cage : Rat
42. Oxygen : Burn :: Carbondioxide : ?
(A) Isolate (B) Foam
(C) Extinguish (D) Explode
43. Blue whale : Sea :: ? : Land
(A) Turtle (B) Fish
(C) Elephant (D) Green whale
44. Grenade : Gun :: ?
(A) Sister : Brother (B) Father : Mother
(C) Man : Woman (D) Head : Brain
45. Secretive : Open :: Snide : ?
(A) Outcome (B) Forward
(C) Hidden (D) Forthright
46. Book : Library : ?
(A) Bouquet : Flower (B) Ship : Fleet
(C) Fish : River (D) Aeroplane : Sky

ANSWERS

1. (A) 2. (C) 3. (A)
4. (B) 5. (B) 6. (C)
7. (C) 8. (C) 9. (D)
10. (B) 11. (B) 12. (D)
13. (C) 14. (A) 15. (B)
16. (B) 17. (C)
18. (B) Yesterday : Tomorrow :: March : **May**

19. (C) 20. (A) 21. (C)
22. (D) 23. (B) 24. (C)
25. (D) Love : Hate :: Friend : **Enemy**

26. (A)
27. (B) Encourage : Restrict : **dearth** :: **surplus**.

ANALOGY TEST (TYPE - III)

Directions: In questions given below select the related letters from the given alternatives.

1. AC : CF :: MO : ?
(A) OQ (B) PQ
(C) QR (D) OR
2. RT : WZ :: PR : ?
(A) UX (B) TU
(C) RV (D) XU
3. BC : DI :: DE : ?
(A) PY (B) FP
(C) EI (D) RU
4. AD : NQ :: EH : ?
(A) RT (B) RU
(C) RS (D) RV
5. AN : BO :: CP : ?
(A) DQ (B) FS
(C) DS (D) FQ
6. LO : PK :: IR : ?
(A) GT (B) SH
(C) MN (D) FU
7. LKJ : MNO :: DCB : ?
(A) FEG (B) EGF
(C) FGH (D) EFG
8. NLO : RPS :: VTW : ?
(A) XWY (B) VTR
(C) TRP (D) VUW
9. RUX : TRP :: BEH : ?
(A) SQN (B) QON
(C) QOM (D) QNL
10. XZY : WVU :: CAB : ?
(A) UVW (B) ABC
(C) FED (D) DEF
11. LJH : KKI :: CIA : ?
(A) DBB (B) BJB
(C) CBZ (D) BBZ
12. BCD : GFE :: HIJ : ?
(A) KLM (B) MLK
(C) MKL (D) LMK
13. BYW : DWU :: FUS : ?
(A) ESQ (B) GST
(C) HSQ (D) EST
14. FED : IHG :: ? : WVU
(A) XYZ (B) PQR
(C) TSR (D) IJK

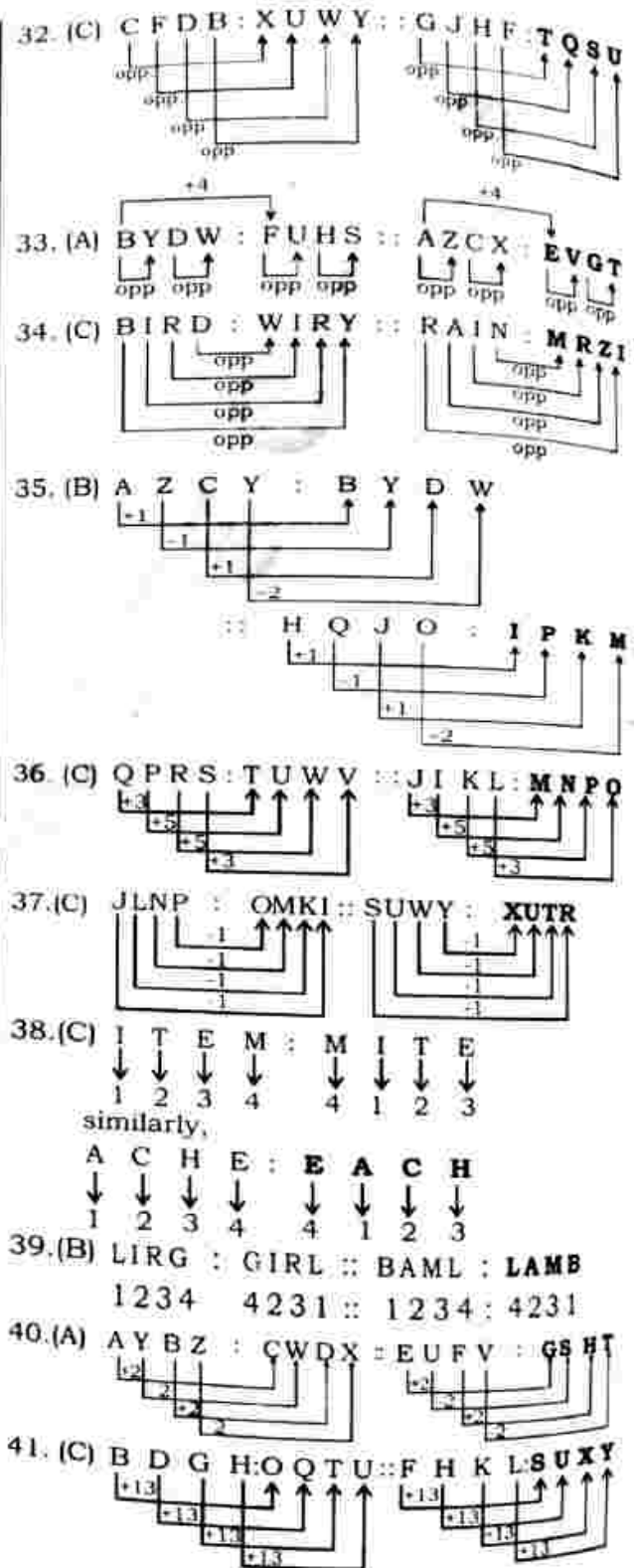
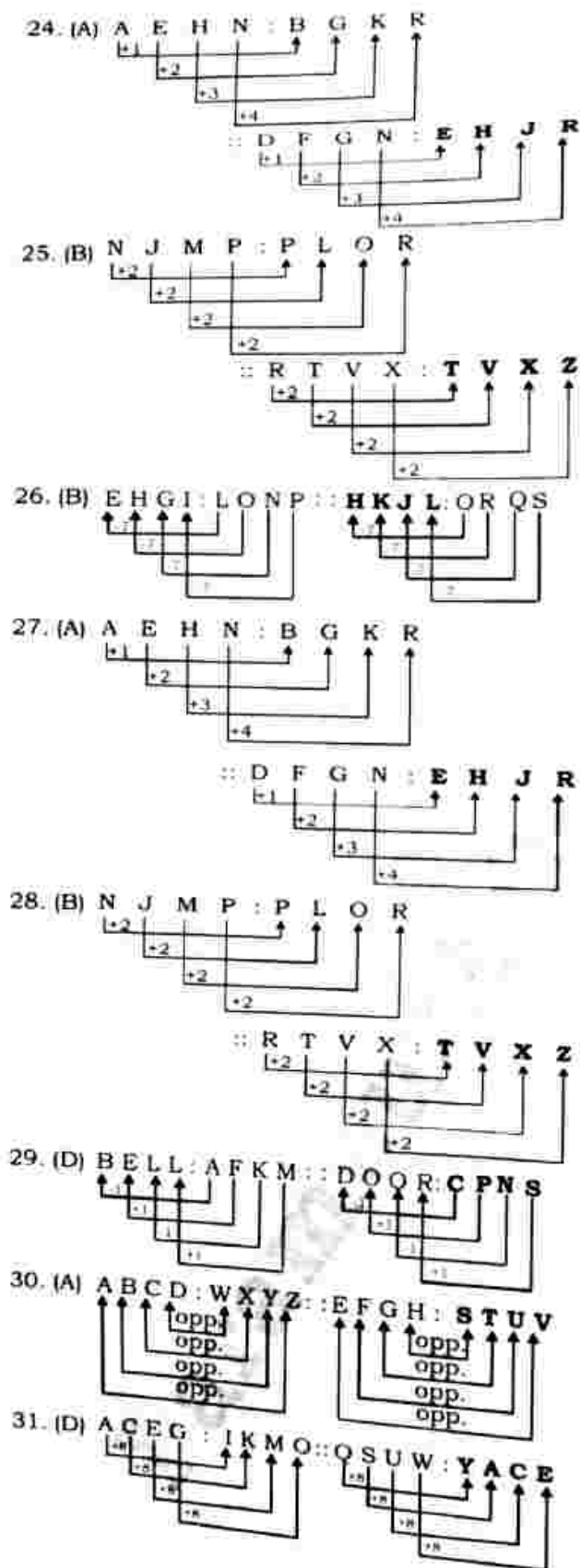
15. ACF : JLO :: UWZ : ?
(A) CEG (B) MOP
(C) QRV (D) GIL
16. ACE : KIG :: MOQ : ?
(A) WUS (B) WVU
(C) WVT (D) WUT
17. AZB : BYC :: MVN : ?
(A) NUO (B) NVO
(C) NVQ (D) NRQ
18. QTU : ILM :: BEF : ?
(A) PSZ (B) CFH
(C) WZA (D) UXB
19. AEZ : FPY :: BGX : ?
(A) HWW (B) IYY
(C) HTX (D) HYW
20. $\frac{ABC}{F} : \frac{BCD}{I} :: \frac{CDE}{L} : ?$
(A) $\frac{DEF}{O}$ (B) $\frac{DEF}{N}$
(C) $\frac{EDF}{O}$ (D) $\frac{DEF}{M}$
21. AZCY : BYDW :: HQJO : ?
(A) GRFP (B) IPKM
(C) IPKN (D) GRJP
22. AZBY : CXDW :: HSIR : ?
(A) JQKP (B) KPLO
(C) YBXC (D) TGSH
23. DMVE : ? :: HQZI : JSBK
(A) GOXF (B) FOXG
(C) GOXG (D) FNWG
24. AEHN : BGKR :: DFGN : ?
(A) EHJR (B) EIJR
(C) EHKQ (D) DHKQ
25. NJMP : PLOR :: RTVX : ?
(A) VTXZ (B) TVXZ
(C) TVZX (D) SVZX
26. EHGI : LONP :: ? : ORQS
(A) GJIK (B) HKJL
(C) GIHJ (D) HJIK
27. AEHN : BGKR :: DFGN : ?
(A) EHJR (B) EIJR
(C) EHKQ (D) DHKQ
28. NJMP : PLOR :: RTVX : ?
(A) VTXZ (B) TVXZ
(C) TVZX (D) SVZX

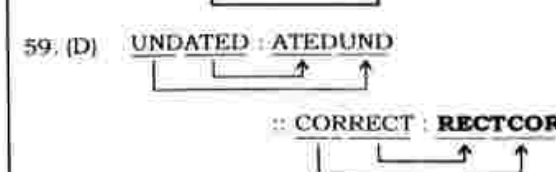
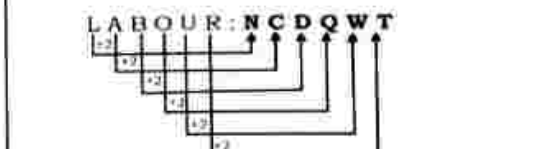
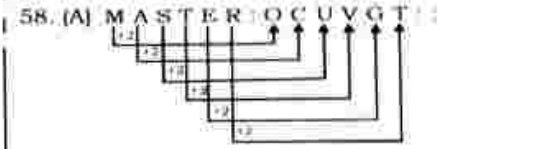
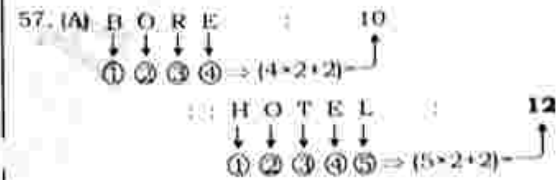
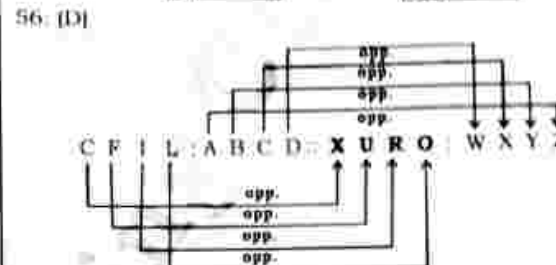
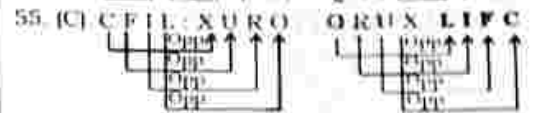
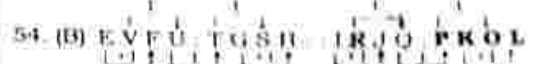
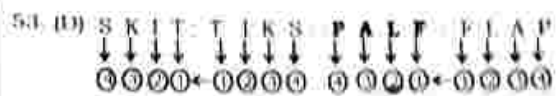
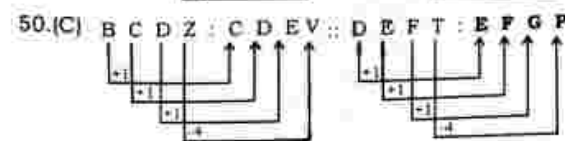
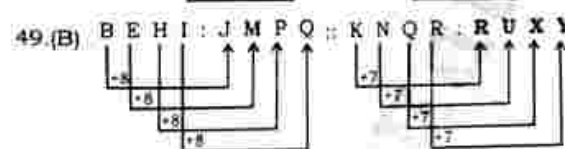
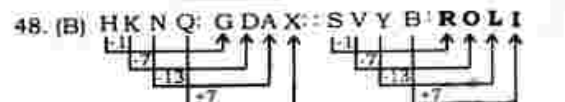
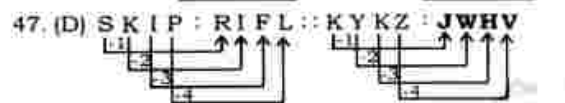
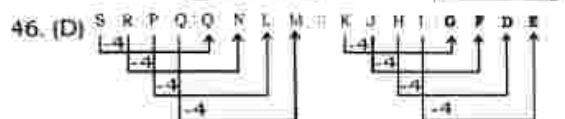
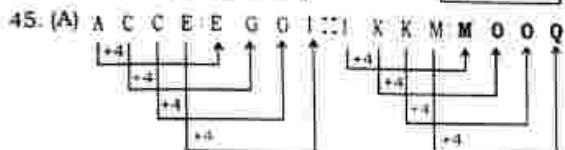
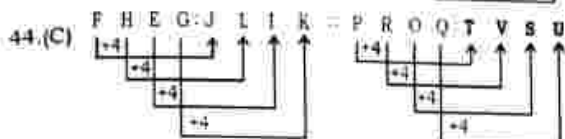
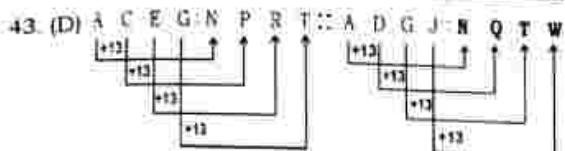
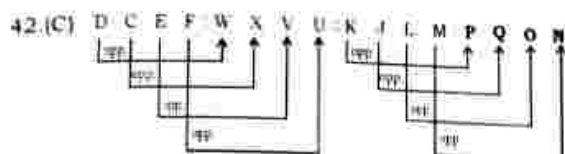
29. BELL : AFKM :: DOOR : ?
 (A) CNPQ (B) ENPS
 (C) EPNS (D) CPNS
30. ABCD : WXYZ :: EFGH : ?
 (A) STUV (B) ZYXW
 (C) VUTS (D) WXZY
31. ACEG : IKMO :: QSUV : ?
 (A) YZCE (B) YACD
 (C) YBCE (D) YACE
32. CFDB : XUWY :: GJHF : ?
 (A) SPRT (B) TSQU
 (C) TQSU (D) SPTR
33. BYDW : FUHS :: AZCX : ?
 (A) EVGT (B) FVGT
 (C) EGVF (D) FGVF
34. BIRD : WIRY : RAIN : ?
 (A) YRIW (B) NIAR
 (C) MRZI (D) QAIM
35. AZCY : BYDW :: HQJO : ?
 (A) GRFP (B) IPKM
 (C) IPKN (D) GRJP
36. QPRS : TUWV :: JIKL : ?
 (A) NMOP (B) NMPO
 (C) MNPO (D) MNOP
37. JLNP : OMKI :: SUWY : ?
 (A) MLKI (B) PLHD
 (C) XVTR (D) PGHI
38. ITEM : MITE :: ACHE : ?
 (A) HEAC (B) HECA
 (C) EACH (D) CEHA
39. LIRG : GIRL : BAML : ?
 (A) ALMB (B) LAMB
 (C) MALB (D) LABM
40. AYBZ : CWDX :: EUFV : ?
 (A) GSHT (B) GHST
 (C) SHGT (D) MVGT
41. BDGH : OQTU :: FHKL : ?
 (A) JKLM (B) BCDE
 (C) SUXY (D) WXYZ
42. DCEF : WXVU :: KJLM : ?
 (A) QPRS (B) STRQ
 (C) PQON (D) NMKL
43. ACEG : NPRT :: ADGJ : ?
 (A) NRTX (B) ORVX
 (C) NQSU (D) NQTV
44. FHEG : JLIK :: PROQ : ?
 (A) TVSI (B) VTUS
 (C) TVSU (D) SUVT
45. ACCE : EGGI :: IKKM : ?
 (A) MOOQ (B) NOOP
 (C) MPPQ (D) NPPR
46. SRPQ : ONLM :: KJHI : ?
 (A) GEDE (B) GFED
 (C) GFDC (D) GFDE
47. SKIP : RIFL :: KYKZ : ?
 (A) WJHV (B) WJVH
 (C) JWVH (D) JWHV
48. HKNQ : GDAX :: SVYB : ?
 (A) TQMK (B) ROLI
 (C) ZVTQ (D) ADGJ
49. BEHI : JMPQ :: KNQR : ?
 (A) SUXY (B) RUXY
 (C) RVXY (D) RUYX
50. BCDZ : CDEV :: DEFT : ?
 (A) FFGQ (B) EGFR
 (C) EFGP (D) EFGS
51. DHLF : BDFH :: FLRX : ?
 (A) CFHL (B) CFIL
 (C) FILK (D) HLKM
52. IJKL : STUV :: MNOP : ?
 (A) PQRS (B) RSTU
 (C) VWXY (D) WXYZ
53. SKIT : TIKS :: ? : FLAP
 (A) PLFA (B) PFAL
 (C) PLAF (D) PALF
54. EVFU : TGSH :: IRJQ : ?
 (A) KWLX (B) PKOL
 (C) OLPK (D) PKLO
55. CFIL : XURO :: ORUX : ?
 (A) ROLI (B) RITO
 (C) LIFC (D) MJFC
56. CFIL : ABCD :: ? : WXYZ
 (A) ZYXW (B) DCBA
 (C) JHPS (D) XURO
57. BORE : 10 :: HOTEL : ?
 (A) 12 (B) 15
 (C) 18 (D) 30
58. MASTER : OCUVGT :: LABOUR : ?
 (A) NCDQWT (B) NDERWT
 (C) NBECRWT (D) NEDRWT
59. UNDATED : ATEDUND :: CORRECT : ?
 (A) PRECTOC (B) RECTROC
 (C) ECTRORC (D) RECTCOR

ANSWER

1. (D) A C : C F :: M O : O R
 2. (A) R T : W Z :: P R : U X
 3. (A) B C : D I :: D E : P Y
 4. (B) A D : N Q :: E H : R U
 5. (A) A N : B O :: C P : D Q
 6. (C) L O : P K :: I R : M N
 7. (D) L K J : M N O
 Similarly,
 D C B : E F G
 8. (A) N L O : R P S :: V T W : X V Y
 9. (C) R U X : T R P :: B E H : O O M
 10. (D) X Z Y : W V U :: C A B : D E F
 11. (B) L J H : K K I :: C I A : B J B
 12. (B) B C D : G F E :: H I J : M L K
 13. (C) B Y W : D W U :: F U S : H S Q

14. (C) F E D : I H G :: T S R : W V U
 15. (D) A C F : J O : U W Z : G I L
 16. (A) A C E : K I G :: M O Q : W U S
 17. (A) A Z B : B Y C : M V N : N U O
 18. (C) Q T U : L M : B F E : W Z A
 19. (A) A E Z : F P Y :: B G X : H W W
 20. (A) A B C B C D C D E D E F → numerator
 F I L O → denominator
 21. (B) A Z C Y : B Y D W :: H Q J O : I P K N
 22. (A) A Z B Y : C X D W
 23. (B) D M V E : F O X G
 H Q Z I : J S B K





MIRROR IMAGES

The image of an object as seen in a mirror is known as mirror image.

In mirror image of an object, right side of the object appears at left side and vice-versa.

There are certain objects the mirror images of which are identical to the objects.

The objects given below are such objects, the image of which is identical to the object.

A, H, I, M, O, T, U, V, W, X, Y, 8, 0

$\triangle, \square, \bigcirc, \star, \uparrow, \bigcirc, \text{hexagon}, \perp$

Mirror images of numbers

<u>Number</u>	<u>Mirror Image</u>
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	0

Mirror images of capital letters

Letters	Mirror Image
A	A
B	B
C	C
D	D
E	E
F	F
G	G
H	H
I	I
J	J
K	K
L	L
M	M
N	N
O	O
P	P
Q	Q
R	R
S	S
T	T
U	U
V	V
W	W
X	X
Y	Y
Z	Z

Mirror images of small letters

<u>Letters</u>	<u>Mirror Image</u>
a	s
b	d
c	c
d	b
e	e
f	i
g	g
h	h
i	i
j	j
k	k
l	l
m	m
n	n
o	o
p	p
q	q
r	r
s	s
t	t
u	u
v	v
w	w
x	x
y	y
z	z

Mirror images of some symbols

Symbol	Mirror Image
	
	
	
	
	
	
	
	
	
	
	
	

Symbol

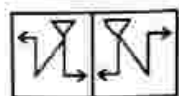


Mirror Image



In the mirror image of an object, right side of the object appears at the left side and left side of the object appears at the right side. This is called **lateral inversion**.

Some examples



Part of object

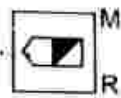


Mirror Image

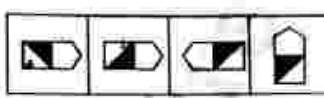


Example : 1

Problem Figure



Answer Figures



(A) (B) (C) (D)

Answer with explanation: In the problem figure two diagrams are joint to make one diagram.

The mirror image of will be as and the mirror image of will be as . The right of the figure will be at left and vice versa.

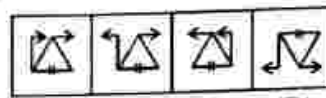
So answer is (A)

Example : 2

Problem figure



Answer figures



(A) (B) (C) (D)

Answer with explanation: The problem figure is divided into three parts. The combined mirror image of these three parts will be as in answer figure (B).

The mirror image of will be as , the mirror image of will be as and the mirror image of will be as .

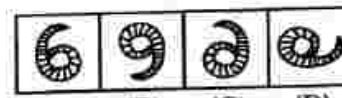
So answer is (B)

Example : 3

Problem figure



Answer figures



(A) (B) (C) (D)

Answer with explanation: The image of the digit 6 in the problem figure will be the design as in answer figure (C).

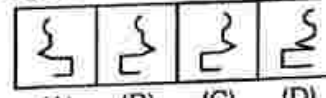


Example : 4

Problem figure



Answer figures



(A) (B) (C) (D)

Split the figure and make the mirror image



Now join the images



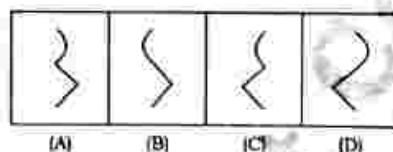
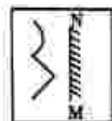
Answer : Hence in the given question the mirror image will be (C).

Example : 5

On M , N point of the given structure which type of image will form?

Problem figure

Answer figures



Answer : According to the problem figure the structure created on point M, N will be the structure as shown in the option (C). Split the figure



Now join the images



Example : 6

REASONING

(A) 01102A3H

(C) 0N1N0SAER

Answer : (A)

(B) 01102AER

(D) REASONING

Example : 7

54316

(A) 91E72

(C) 01E72

Answer : (C)

(B) 61345

(D) 27E10

Exercise

Directions: (Q. 1-50) In each of the following questions a problem figure or a combination of letters or/and numbers is given which is followed by four alternative (A) , (B) , (C) and (D). Find out the alternative which is the mirror-image of the given combination.

Problem Figure

Answer Figures

- Problem Figure:

Answer Figures: (A) (B) (C) (D)
- Problem Figure:

Answer Figures: (A) (B) (C) (D)
- Problem Figure:

Answer Figures: (A) (B) (C) (D)
- Problem Figure:

Answer Figures: (A) (B) (C) (D)
- Problem Figure:

Answer Figures: (A) (B) (C) (D)
- Problem Figure:

Answer Figures: (A) (B) (C) (D)
- Problem Figure:

Answer Figures: (A) (B) (C) (D)

Problem Figure

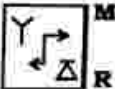
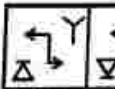
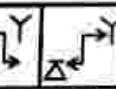
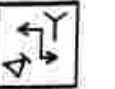
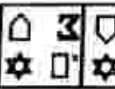
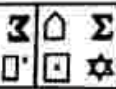
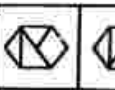
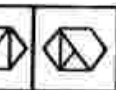
Answer Figure

8.  (A)  (B)  (C)  (D) 
9.  (A)  (B)  (C)  (D) 
10.  (A)  (B)  (C)  (D) 
11.  (A)  (B)  (C)  (D) 
12.  (A)  (B)  (C)  (D) 
13.  (A)  (B)  (C)  (D) 
14.  (A)  (B)  (C)  (D) 
15.  (A)  (B)  (C)  (D) 
16.  (A)  (B)  (C)  (D) 
17.  (A)  (B)  (C)  (D) 

Problem Figure

Answer Figure

18.  (A)  (B)  (C)  (D) 
19.  (A)  (B)  (C)  (D) 
20.  (A)  (B)  (C)  (D) 
21.  (A)  (B)  (C)  (D) 
22.  (A)  (B)  (C)  (D) 
23.  (A)  (B)  (C)  (D) 
24.  (A)  (B)  (C)  (D) 
25.  (A)  (B)  (C)  (D) 
26.  (A)  (B)  (C)  (D) 
27.  (A)  (B)  (C)  (D) 

28.  (A)  (B)  (C) 
29.  (A)  (B)  (C) 
30.  (A)  (B)  (C) 
31. SCIENCE
(A) SCIENCE (B) SCIENCE
(C) SCIENCE (D) SCIENCE
32. QUIZ
(A) QUIZ (B) QUIZ
(C) QUIZ (D) QUIZ
33. BOOK
(A) BOOK (B) BOOK
(C) BOOK (D) BOOK
34. Based
(A) Based (B) Based
(C) Based (D) Based
35. latest
(A) latest (B) latest
(C) latest (D) latest
36. EXAMS
(A) EXAMS (B) EXAMS
(C) EXAMS (D) EXAMS
37. OFFICER
(A) OFFICER (B) OFFICER
(C) OFFICER (D) OFFICER
38. CONTENTS
(A) CONTENTS (B) CONTENTS
(C) CONTENTS (D) CONTENTS

39. POSITION
(A) POSITION (B) POSITION
(C) POSITION (D) POSITION
40. MIRROR
(A) MIRROR (B) MIRROR
(C) MIRROR (D) MIRROR
41. ANALOGY
(A) ANALOGY (B) ANALOGY
(C) ANALOGY (D) ANALOGY
42. ENGLISH
(A) ENGLISH (B) ENGLISH
(C) ENGLISH (D) ENGLISH
43. GEOGRAPHY
(A) GEOGRAPHY (B) GEOGRAPHY
(C) GEOGRAPHY (D) GEOGRAPHY
44. INFORMATION
(A) INFORMATION (B) INFORMATION
(C) INFORMATION (D) INFORMATION
45. NATIONAL
(A) NATIONAL (B) NATIONAL
(C) NATIONAL (D) NATIONAL
46. BANK
(A) BANK (B) BANK
(C) BANK (D) BANK
47. 1234
(A) 1234 (B) 1234
(C) 1234 (D) 1234
48. 8193
(A) 8193 (B) 8193
(C) 8193 (D) 8193
49. TEST
(A) TEST (B) TEST
(C) TEST (D) TEST

ANSWERS

1 (C)	5 (D)	9 (D)	4 (D)	5 (D)	6 (A)	7 (C)	8 (D)
6 (A)	10 (D)	11 (D)	12 (D)	13 (D)	14 (D)	15 (A)	16 (C)
17 (A)	18 (A)	19 (A)	20 (D)	21 (B)	22 (C)	23 (B)	24 (B)
25 (D)	26 (C)	27 (A)	28 (A)	29 (A)	30 (A)	31 (A)	32 (B)
33 (C)	34 (A)	35 (D)	36 (C)	37 (D)	38 (A)	39 (B)	40 (D)
41 (D)	42 (D)	43 (A)	44 (C)	45 (B)	46 (B)	47 (C)	48 (A)
49 (D)							

WATER IMAGE

The reflection of an object as appears in water is known as **water-image**.

In water image the image of upper part of the object is seen downward and the lower part of the object is seen upward.

Water images of numbers

Number	Water Image
0	0
1	1
2	3
3	2
4	4
5	2
6	9
7	1
8	8
9	6

Water images of capital letters

Letter	Water Image
A	V
B	B
C	C
D	D
E	E
F	Ⅎ
G	G
H	H
I	I
J	7
K	K
L	⅃
M	M
N	N
O	O
P	q
Q	Q
R	R
S	S
T	T
U	U
V	A
W	W
X	X
Y	Y
Z	Z

Water images of small letters

Letter	Water Image
a	u
b	p
c	c
d	q
e	e
f	Ⅎ
g	p
h	h
i	i
j	l
k	k
l	l
m	m
n	n
o	o
p	b
q	d
r	r
s	s
t	t
u	a
v	v
w	w
x	x
y	y
z	z

Water-images of some symbols.

Symbol	Water Image
	
	
	
	
	
	
	
	
	
	

Symbol



Water Image



Symbol

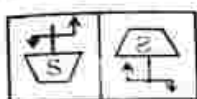


Water Image



Some Examples :

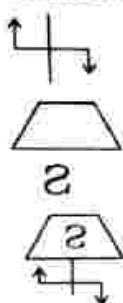
In water image the image of upper part of the object is seen downward and the lower part of the object is seen upward.



Here
Object



Water Image

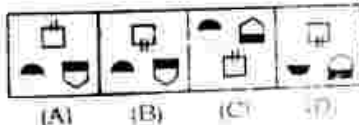


Example 1.

Problem Figure



Answer Figures



Answer with explanation : Here the problem figure consists three diagrams. First of all upper two diagrams will appear downward and the lower diagram will be seen upward. Besides, there will be individual change in each diagram also as shown below:



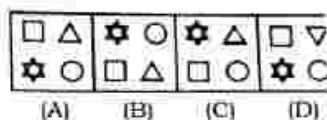
be as in answer figure (A)

Example 2.

Problem Figure



Answer Figures



Answer with explanation : In the problem figure there are four diagrams. Both upper diagrams will be seen below while both the lower diagram will be on upper side. The four diagrams is shown below:



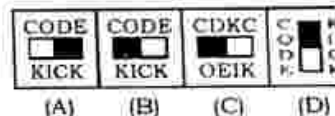
Hence the combined changed figure will be as in answer figure (D).

Example 3.

Problem Figure



Answer Figures



Answer with explanation : The lower part of the problem figure will be the upper part in the water-image and the upper part of the figure will be as in lower part. There will be no change in the black part. Hence the water image of the problem figure appears in answer figure (B).

Example 4.

FAMILY

(A) EVNITA

(B) EVNITA

(C) EVNITA

(D) EVNITA

Ans. (D)

Example 5.

WATER

(A) WATER

(B) WATER

(C) WATER

(D) WATER

Ans. (A)

EXERCISE

Directions: (Q. 1-50) In each of the following figure there is a problem figure which is followed by four answer figures. One of the answer figures is the water-image of the problem figure. Find the water image.

	Problem Figure	Answer Figure
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		

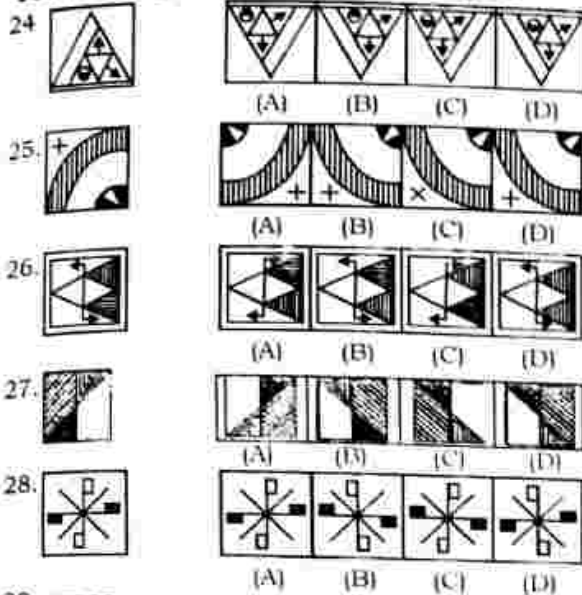
Problem Figure

Answer Figure

12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		

Problem Figure

Answer Figure



29. MNOP
(A) MNOP
(C) MNOB
(B) PONM
(D) MNOP
30. CDEF
(A) CDEF
(C) FEDC
(B) CDEF
(D) CDEF
31. CHIDE
(A) CHIDE
(C) EDHC
(B) CHIDE
(D) CHIDE
32. CODE
(A) CODE
(C) CODE
(B) EDOC
(D) EDOC
33. KICK
(A) KICK
(C) KICK
(B) KICK
(D) KICK
34. RECRUIT
(A) RECRUIT
(C) RECRUIT
(B) RECRUIT
(D) RECRUIT
35. ACOUSTIC
(A) ACOUSTIC
(C) ACOUSTIC
(B) ACOUSTIC
(D) ACOUSTIC

36. NUCLEAR
(A) NUCLEAR
(C) NUCLEAR
(B) NUCLEAR
(D) NUCLEAR
37. QUARREL
(A) QUARREL
(C) QUARREL
(B) QUARREL
(D) QUARREL
38. U4P15B7
(A) U4P15B7
(C) U4P15B7
(B) U4P15B7
(D) U4P15B7
39. PQ8AF5BZ9
(A) PQ8AF5BZ9
(C) PQ8AF5BZ9
(B) PQ8AF5BZ9
(D) PQ8AF5BZ9
40. VAYU8436
(A) VAYU8436
(C) VAYU8436
(B) VAYU8436
(D) VAYU8436
41. 96FSH52
(A) 96FSH52
(C) 96FSH52
(B) 96FSH52
(D) 96FSH52
42. monday
(A) monday
(C) monday
(B) monday
(D) monday
43. wrote
(A) wrote
(C) wrote
(B) wrote
(D) wrote
44. 01234
(A) 01234
(C) 01234
(B) 01234
(D) 01234
45. DK17C
(A) DK17C
(C) DK17C
(B) DK17C
(D) DK17C
46. ab45CD67
(A) ab45CD67
(C) ab45CD67
(B) ab45CD67
(D) ab45CD67
47. D6Z7F4
(A) D6Z7F4
(C) D6Z7F4
(B) D6Z7F4
(D) D6Z7F4
48. XYZ
(A) XYZ
(C) XYZ
(B) XYZ
(D) XYZ

ANSWER KEY

1. (B) 2. (A) 3. (D) 4. (D) 5. (A) 6. (C) 7. (A) 8. (B)
9. (B) 10. (B) 11. (C) 12. (C) 13. (A) 14. (A) 15. (B) 16. (A)
17. (D) 18. (B) 19. (A) 20. (C) 21. (C) 22. (C) 23. (A) 24. (B)
25. (D) 26. (A) 27. (C) 28. (B) 29. (C) 30. (A) 31. (D) 32. (A)
33. (D) 34. (B) 35. (B) 36. (D) 37. (A) 38. (C) 39. (D) 40. (B)
41. (C) 42. (D) 43. (C) 44. (D) 45. (A) 46. (B) 47. (C) 48. (B)

PAPER FOLDING & CUTTING

In this type of questions, some figures are given.

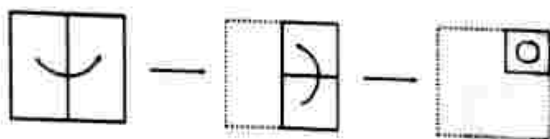
- (A) In the first figure a paper sheet is shown in any shape and size.
- (B) In second figure, it is shown folded in two parts. The part which is covered on other is shown by dotted lines. The arrow shows the direction of the fold.
- (C) In third figure, it is again folded and some of its part is cut or punched as shown in the figure. It is then unfolded.

The pattern so obtained is one of the four alternatives given in the answer figure. The candidate has to find which one of the four alternatives most closely resembles the pattern when unfolded.

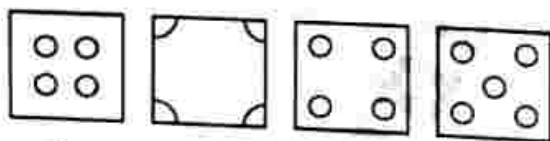
Example 1.

In the following problem figure a piece of paper is shown folded and then a circle shape pattern is cut in it. If this paper is again unfolded then what shape will it take?

Problem Figure



Answer Figure



(A) (B) (C) (D)

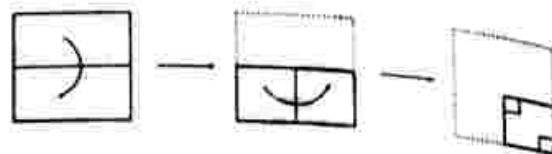
Explanation: In the problem figure, first the paper is folded along the arrow shown and then a circle is cut at the centre of the folded paper.

So after opening that paper, four circles will appear in the four different part as shown in option (C).

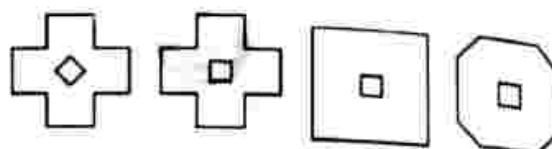
Example 2.

In the following question, a square piece of paper is folded into two parts and then folded into four parts. A right angle shape is cut at the corner and at the centre of the folded paper. What shape will it take when we open it?

Problem Figure



Answer Figure



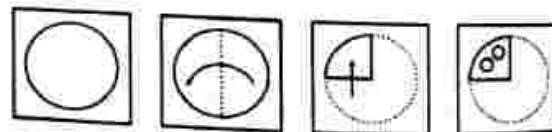
(A) (B) (C) (D)

Explanation : When we re-open the paper, we find a right-angle cut at every corner of the paper and a square cut appears at the centre which is similar to fig. no. (B)

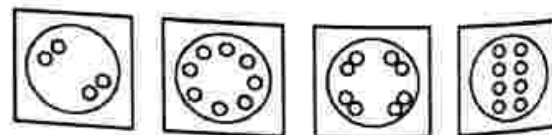
Example 3.

A circular piece of paper is folded in two parts and then into four parts. After folding the paper two small circular shape is cut down in one of the corner of the paper. What will be the shape it takes after re-opening it?

Problem Figure



Answer Figure



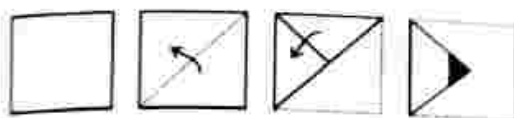
(A) (B) (C) (D)

Explanation : When we open the paper, eight circular shapes will appear all around the circular paper as shown in Ans. Fig. (B)

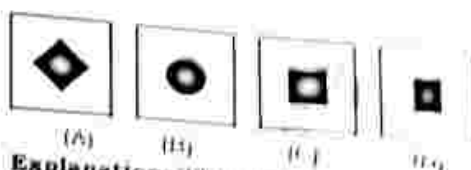
Example 4.

When a square piece of paper is taken and folded into four parts and an equilateral triangular shape is cut-down from the pointed side of paper what will the shape of the paper be?

Problem Figure



Answer Figure

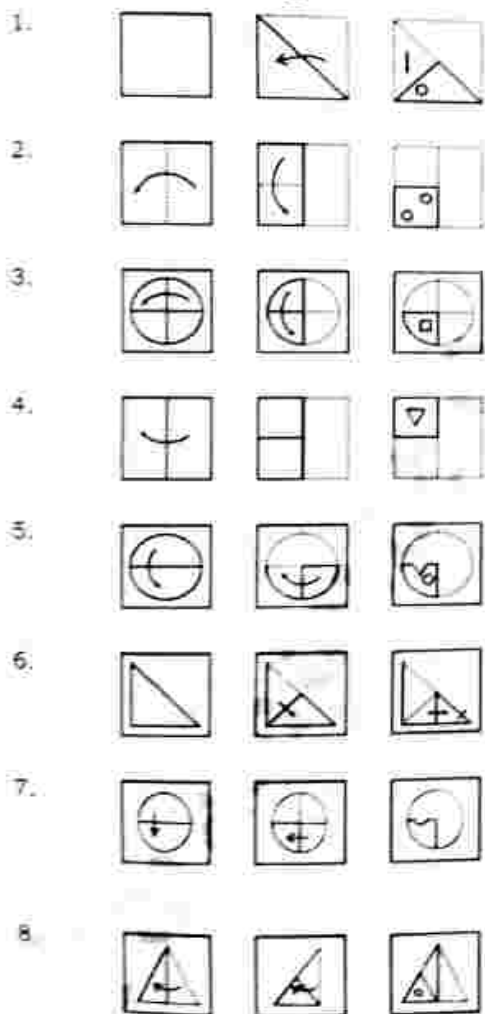


Explanation: When we open the paper after the cut is made, we find a square cut in the centre of the paper which resembles the shape that appear in the answer fig (A).

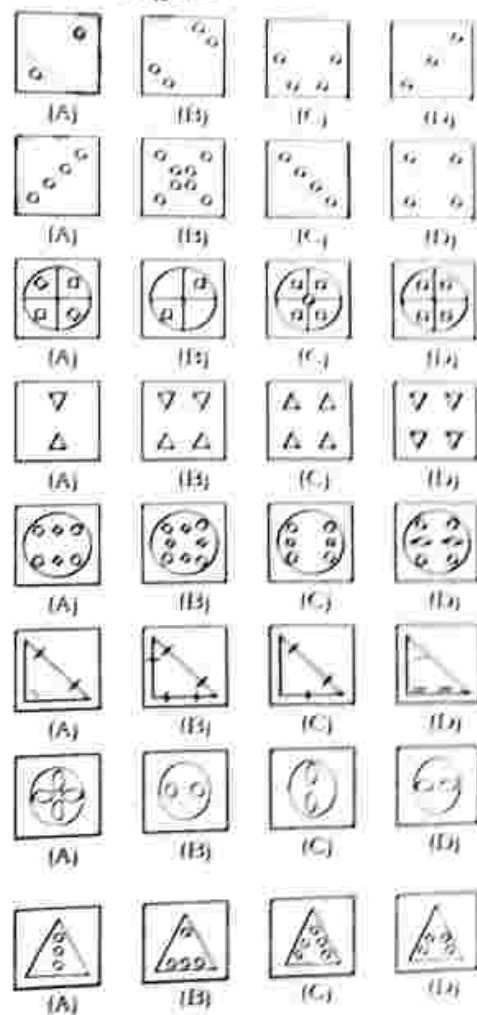
EXERCISE

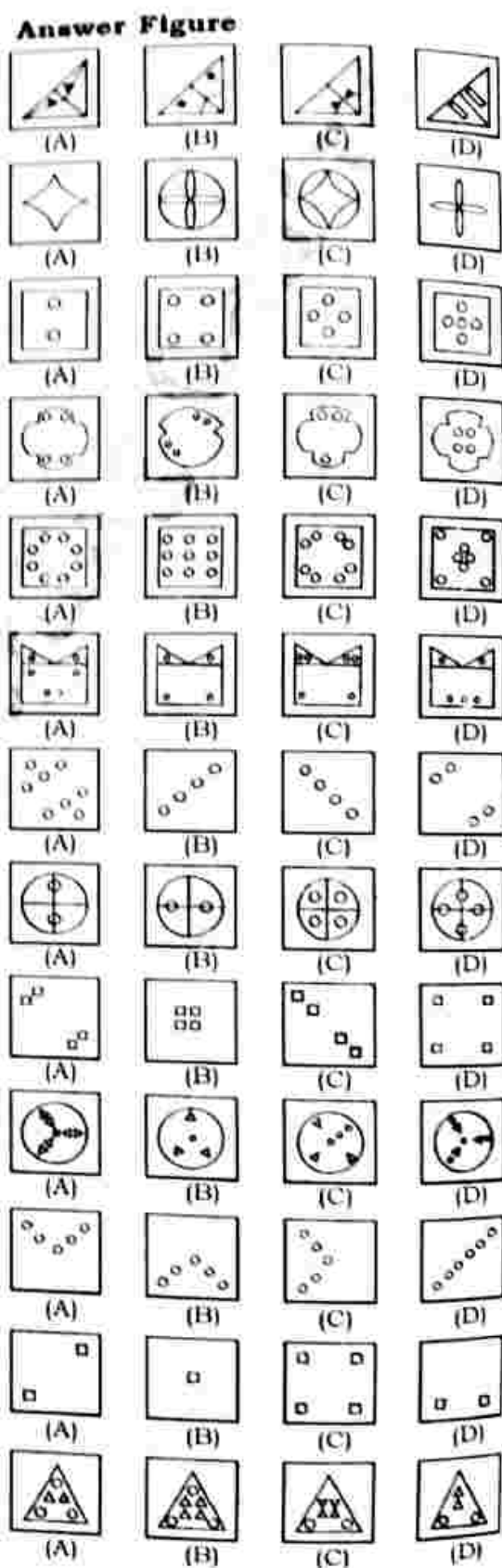
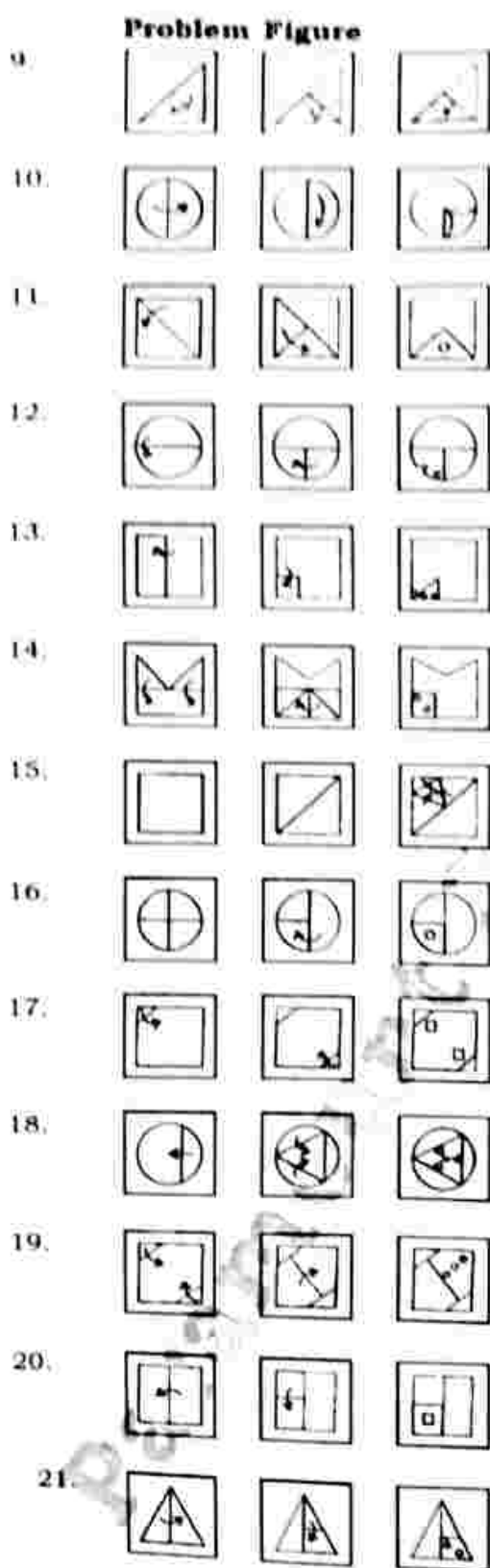
Directions: (Q. 1-30) In each of the questions, a piece of sheet is folded and cut and then unfolded. One of the four alternative figures marked (A), (B), (C) and (D) exactly resembles the unfolded paper. Select this figure.

Problem Figure

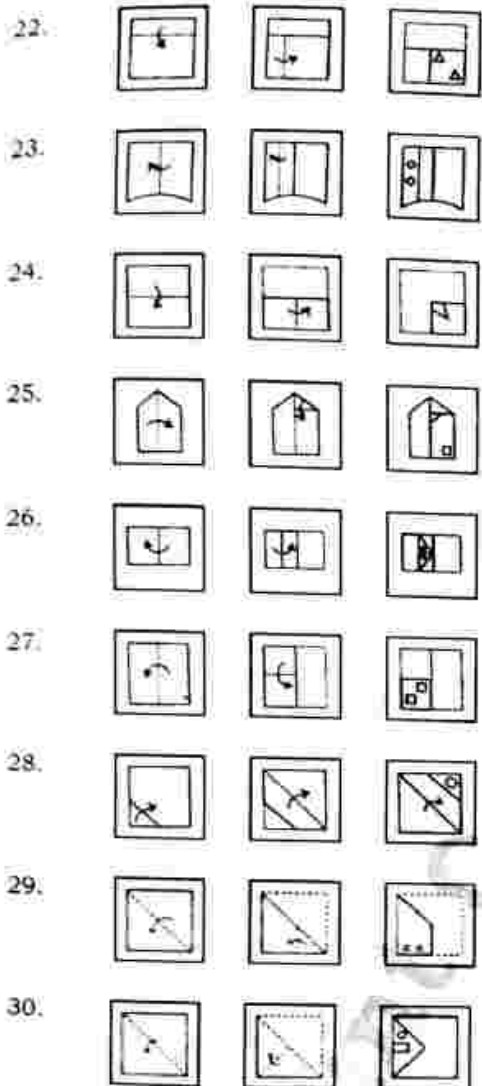


Answer Figure

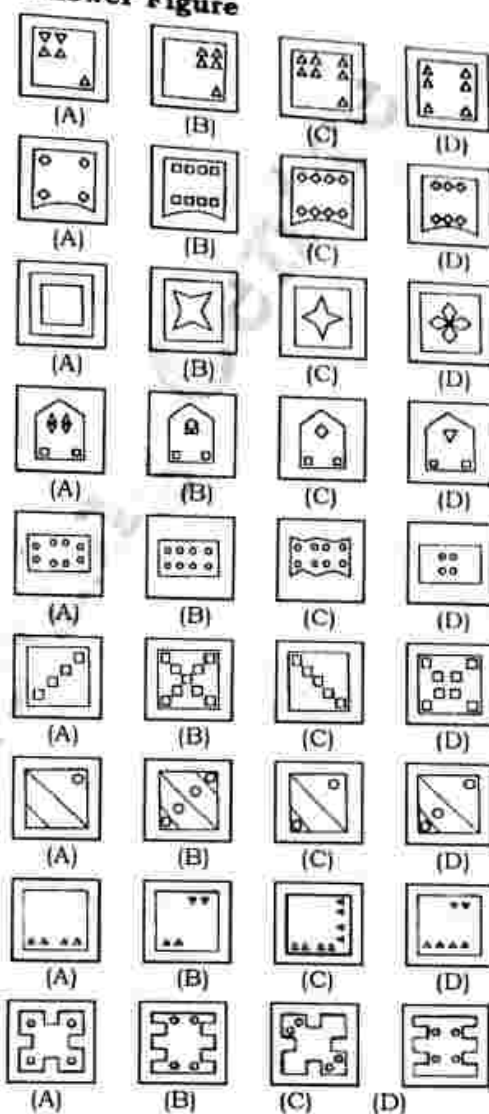




Problem Figure



Answer Figure



ANSWERS

1. (B)	2. (B)	3. (D)	4. (B)	5. (D)	6. (A)	7. (B)
8. (D)	9. (D)	10. (B)	11. (C)	12. (A)	13. (C)	14. (A)
15. (A)	16. (C)	17. (C)	18. (A)	19. (D)	20. (C)	21. (C)
22. (A)	23. (C)	24. (B)	25. (C)	26. (C)	27. (D)	28. (A)
29. (C)	30. (C)					

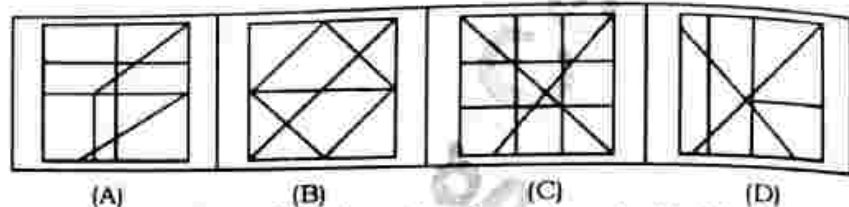
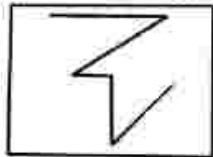
SPOTTING OUT THE EMBEDDED FIGURE

In these types of question, a structure is given in the form of question figure, and thereafter four options of answer figure are represented among which the structure same as question figure is shown to be embedded and a candidate has to find out the option that has the embedded figure.

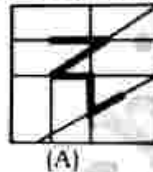
Example 1.

Question Figure

1.

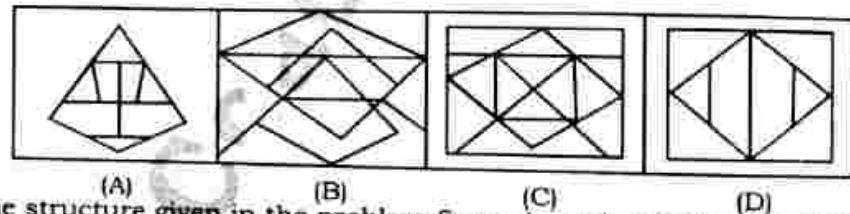
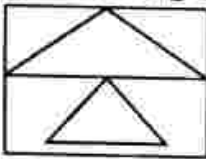


Answer Figure: (A) The structure given in the problem/question figure is embedded in the option (A)

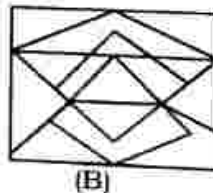


Example 2.

Question Figure

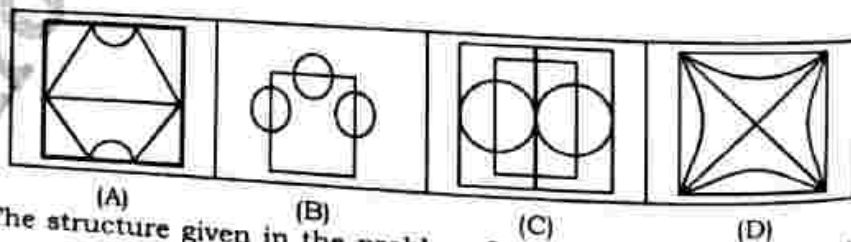
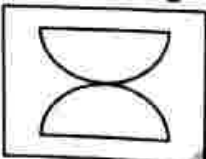


Answer Figure : (B) The structure given in the problem figure is embedded in the option (B)

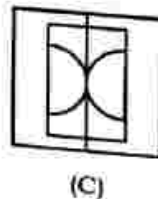


Example 3.

Question Figure



Answer Figure : (C) The structure given in the problem figure is embedded in option (C)



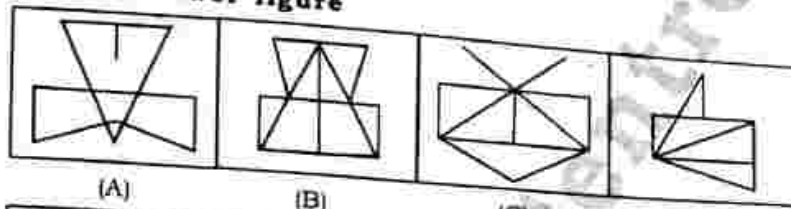
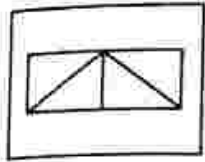
EXERCISE

Directions: In each of the following questions, a structure is given in the form of question figure, and thereafter four options of answer figure are represented among which the structure same as question figure is shown to be embedded and a candidate has to find out the option that has that embedded figure.

Problem figure

Answer figure

1.



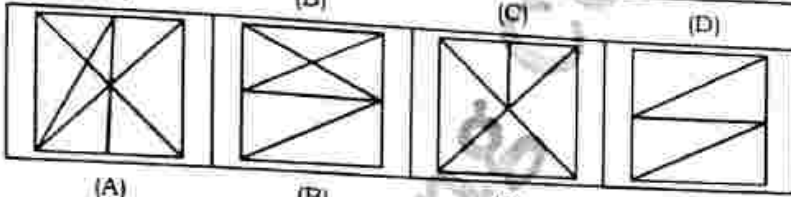
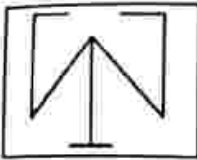
(A)

(B)

(C)

(D)

2.



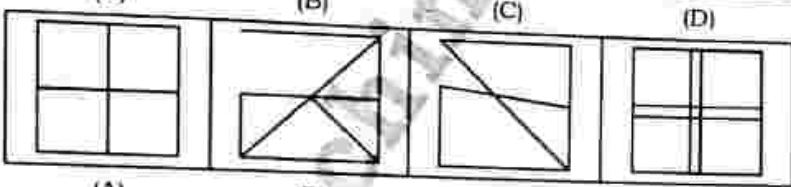
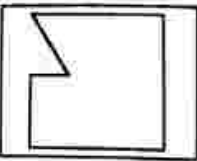
(A)

(B)

(C)

(D)

3.



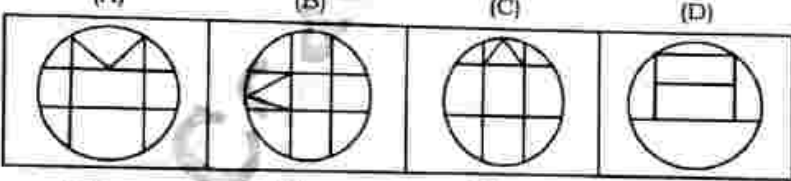
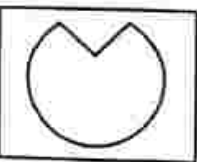
(A)

(B)

(C)

(D)

4.



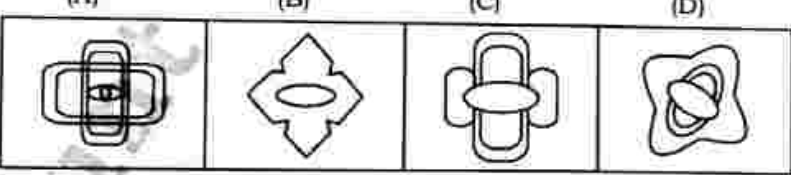
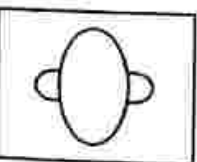
(A)

(B)

(C)

(D)

5.



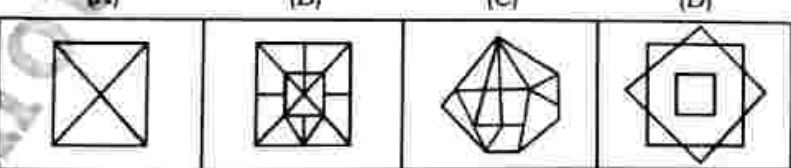
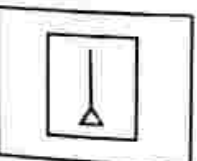
(A)

(B)

(C)

(D)

6.



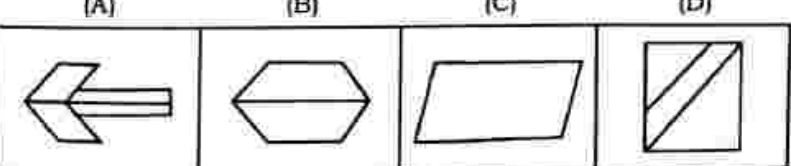
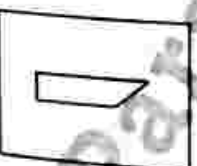
(A)

(B)

(C)

(D)

7.



(A)

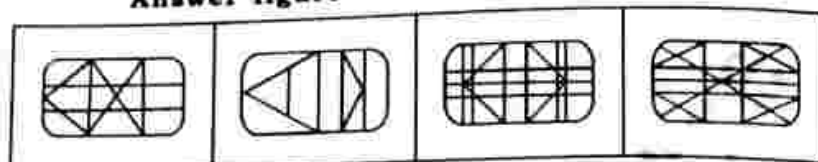
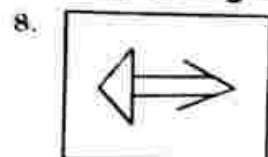
(B)

(C)

(D)

Problem figure

Answer figure

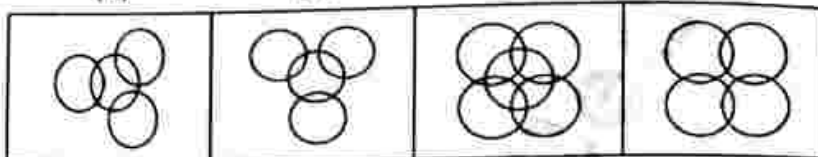


(A)

(B)

(C)

(D)

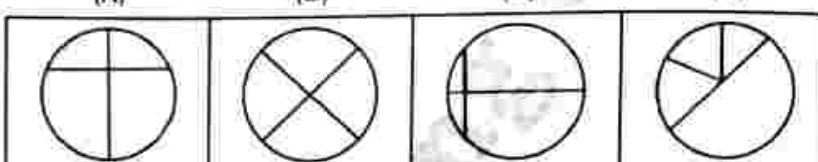
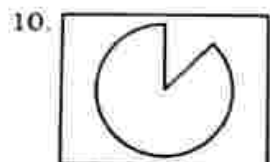


(A)

(B)

(C)

(D)

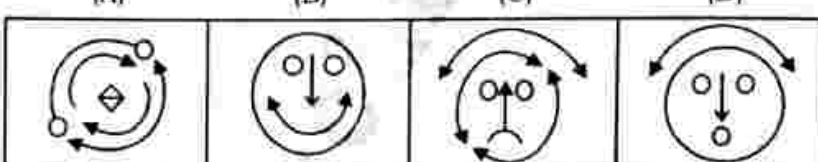
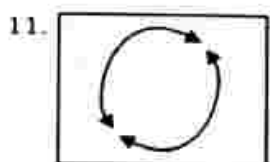


(A)

(B)

(C)

(D)

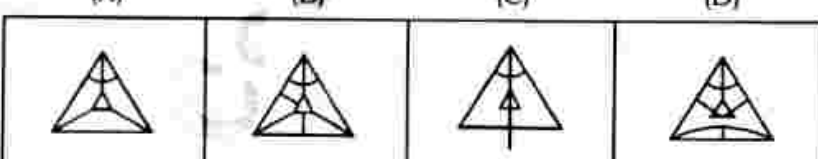
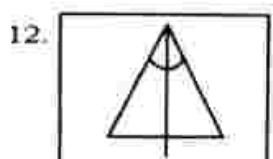


(A)

(B)

(C)

(D)

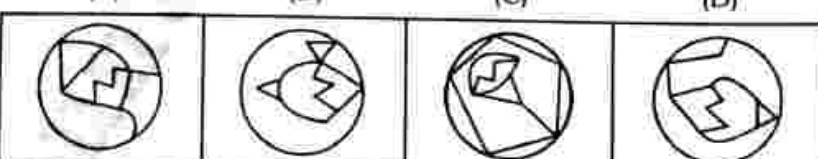


(A)

(B)

(C)

(D)

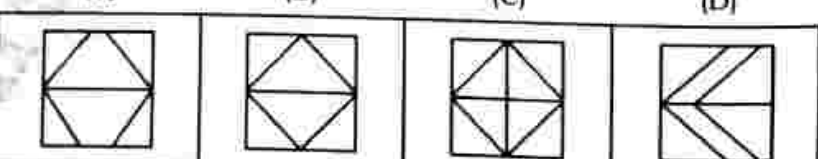
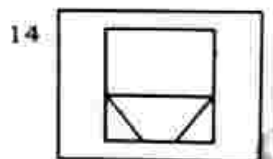


(A)

(B)

(C)

(D)



(A)

(B)

(C)

(D)



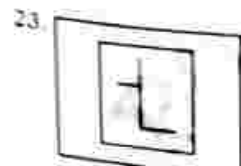
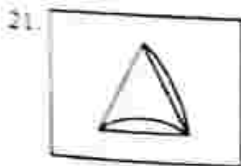
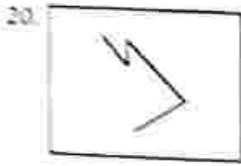
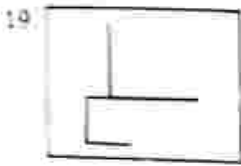
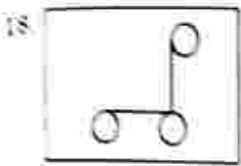
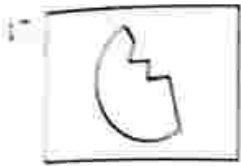
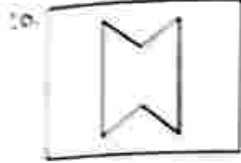
(A)

(B)

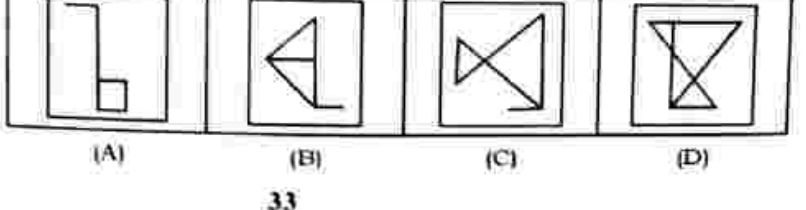
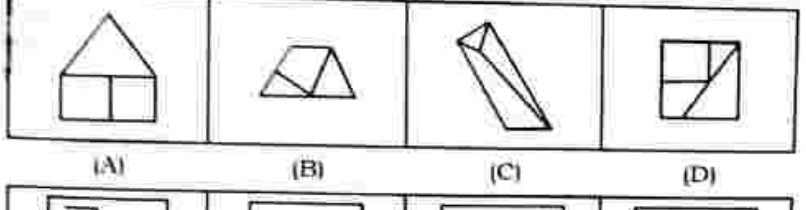
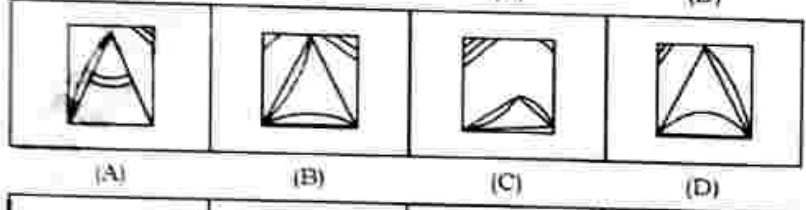
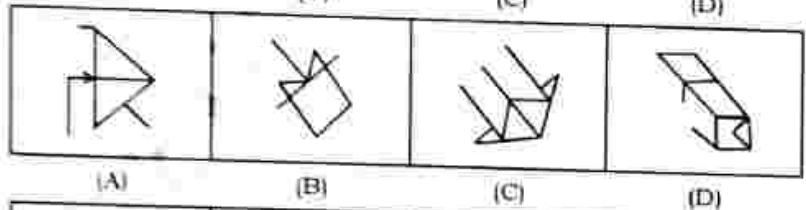
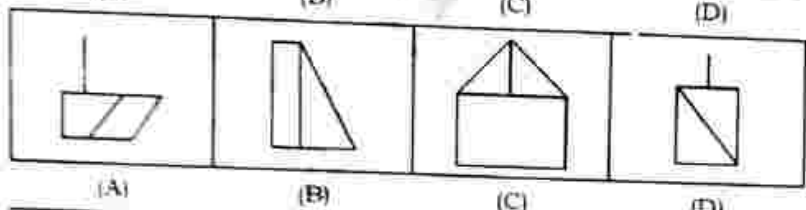
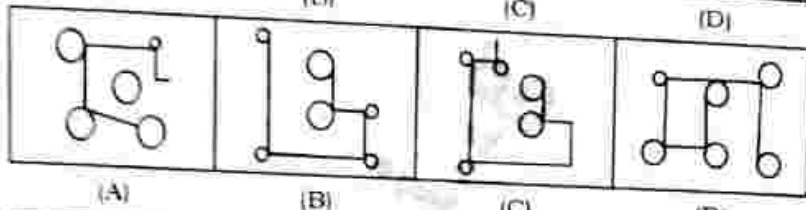
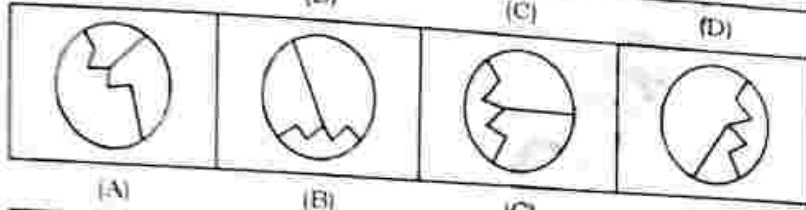
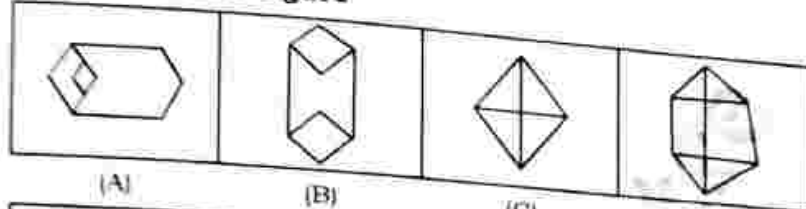
(C)

(D)

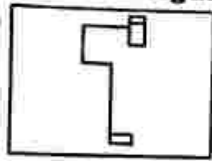
Problem figure



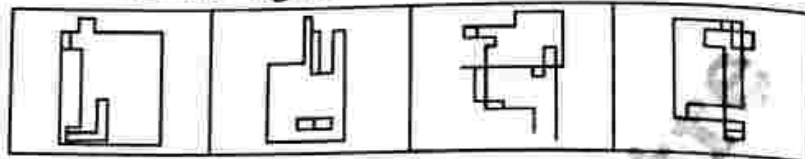
Answer figure



24. **Problem figure**



Answer figure



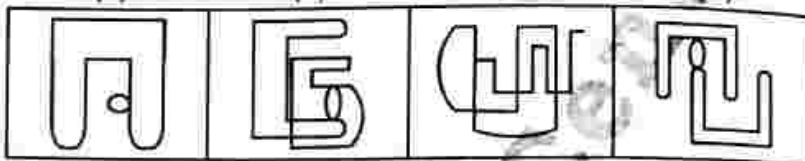
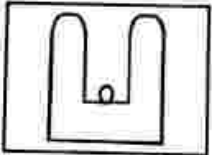
(A)

(B)

(C)

(D)

25.



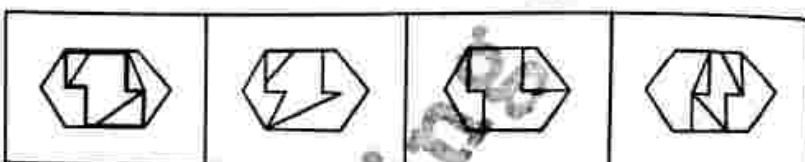
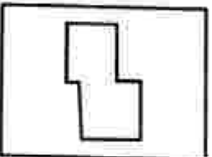
(A)

(B)

(C)

(D)

26.



(A)

(B)

(C)

(D)

27.



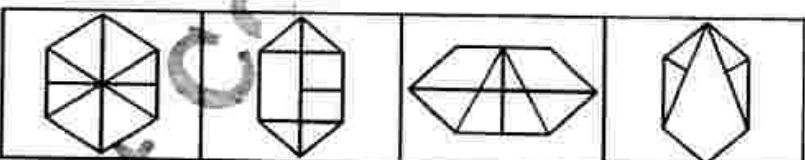
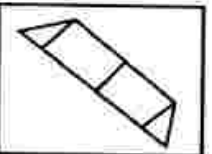
(A)

(B)

(C)

(D)

28.



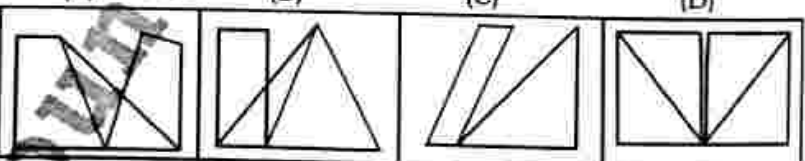
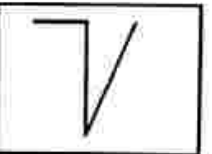
(A)

(B)

(C)

(D)

29.



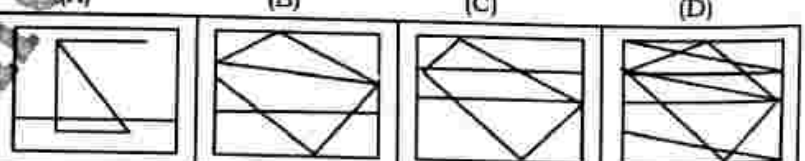
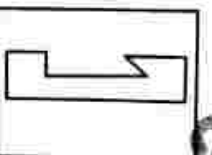
(A)

(B)

(C)

(D)

30.



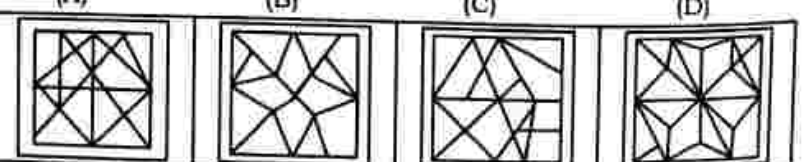
(A)

(B)

(C)

(D)

31.



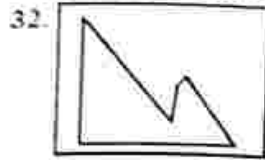
(A)

(B)

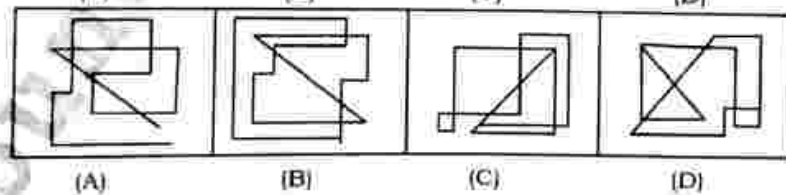
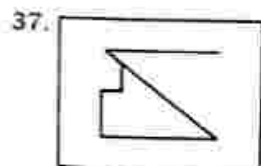
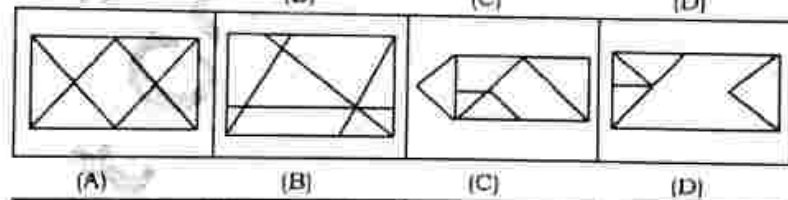
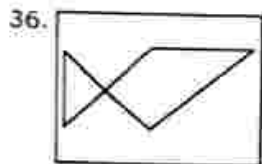
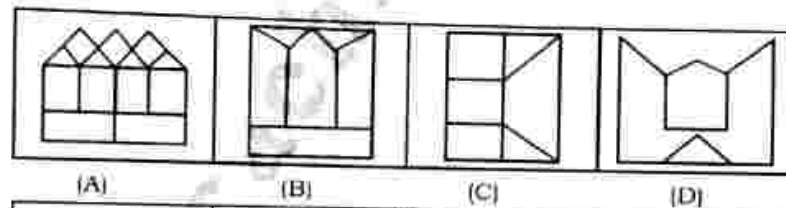
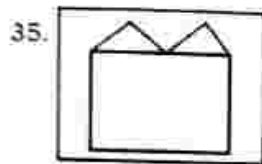
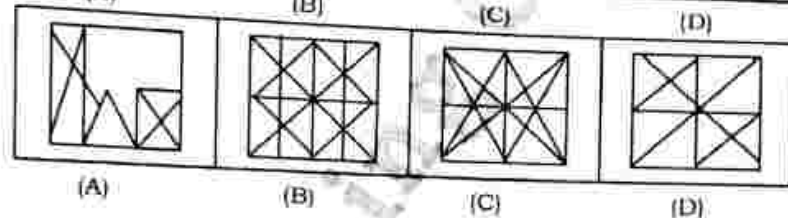
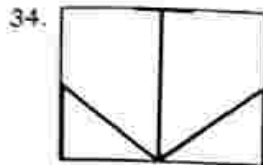
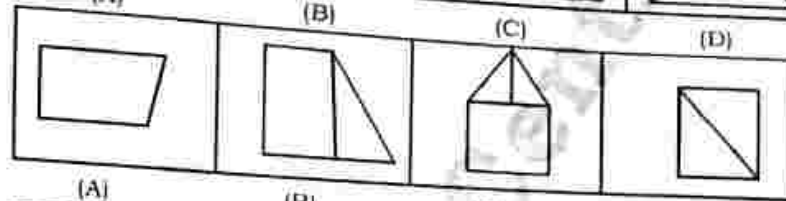
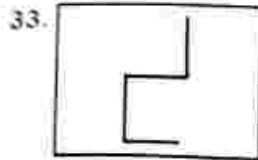
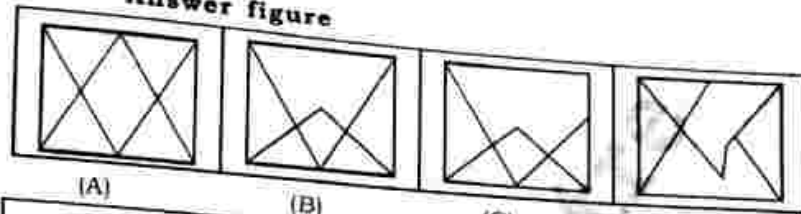
(C)

(D)

Problem figure



Answer figure



ANSWERS

1. (C)	2. (C)	3. (C)	4. (A)	5. (D)	6. (B)
7. (A)	8. (C)	9. (C)	10. (D)	11. (C)	12. (C)
13. (C)	14. (A)	15. (C)	16. (B)	17. (A)	18. (D)
19. (A)	20. (B)	21. (D)	22. (A)	23. (B)	24. (D)
25. (D)	26. (A)	27. (D)	28. (B)	29. (B)	30. (A)
31. (D)	32. (D)	33. (C)	34. (B)	35. (A)	36. (A)
37. (B)					

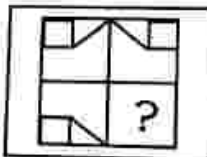
INCOMPLETE FIGURE

In this type of questions, there is a problem figure followed by four answer figures. In problem figure some blank space is left. In answer figures there is only one figure, which if placed in blank space, the problem figure will be completed.

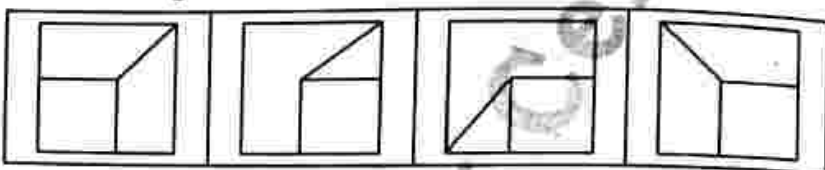
Some examples are given below:

Example 1. Find out the answer figure which will complete the blank space of problem figure.

Problem Figure



Answer Figure



(A)

(B)

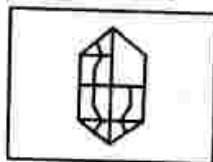
(C)

(D)

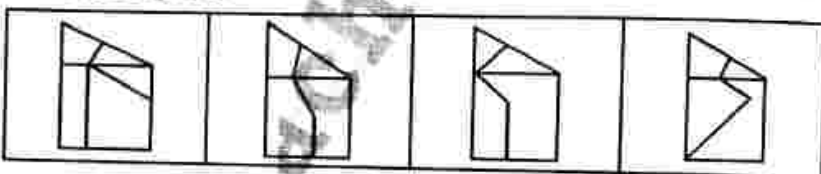
Explanation: (C) In the problem figure, if left side of upper part will be reverse, the structure of right side will appear. In the same way when the left side of the lower part will be reversed, the structure given in option (C) of the answer figure will appear.

Example 2. Find out the answer figure which will complete the blank space of the problem figure?

Problem Figure



Answer Figures



(A)

(B)

(C)

(D)

Explanation: (B) In the question figure, if the lower part of left side will be reversed vertically then we get the figure shown in upper left part. In the same way when the lower part of right side will be reversed vertically, we will get the required missing figure. Option (B) will fulfill our requirement. Hence option (B) is the answer.

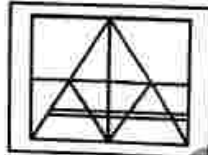
EXERCISE

Direction: (Q. no. 1-32) In each of the following questions one problem figure is given. This is followed by four answer figures. In problem some blank is left which is shown by question mark. In answer figures there is only one figure which if placed in the place of pattern, will complete the pattern. Find the figure which completes the pattern.

Problem Figure

Answer Figures

1.



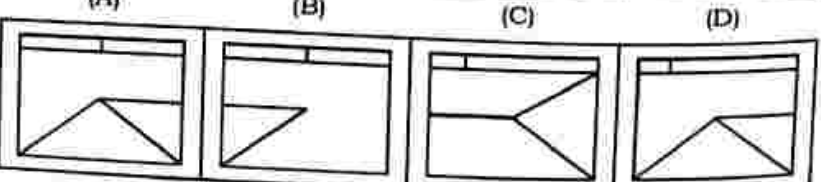
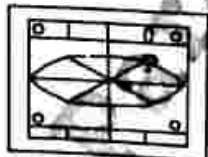
(A)

(B)

(C)

(D)

2.

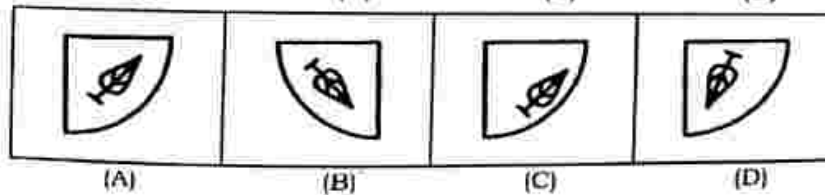
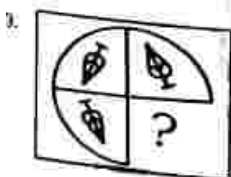
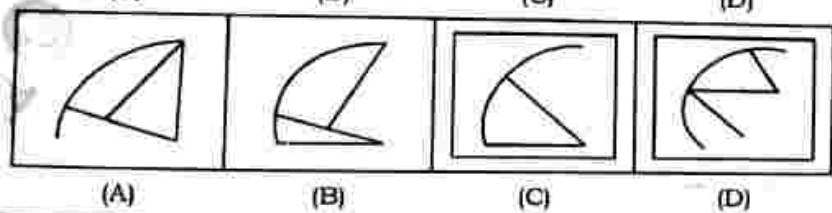
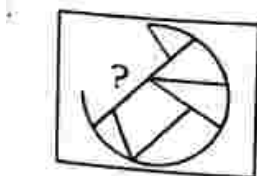
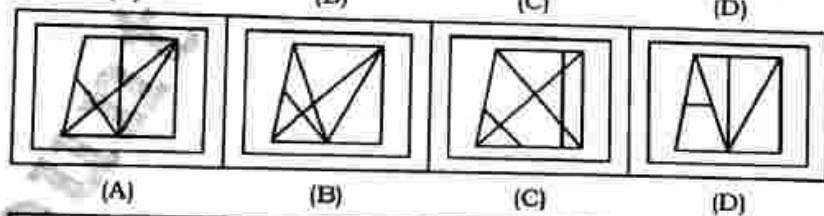
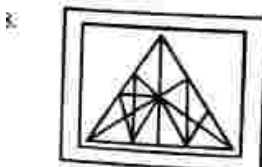
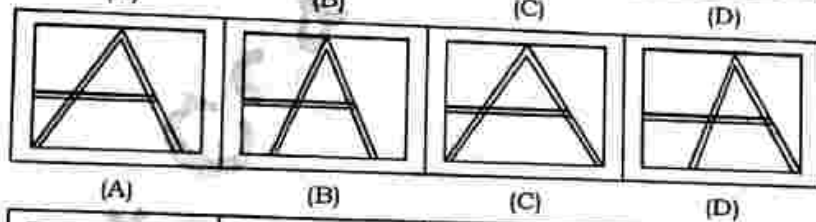
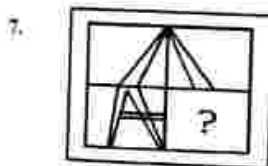
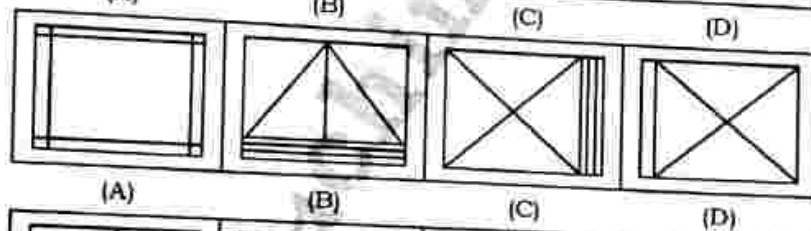
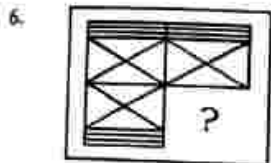
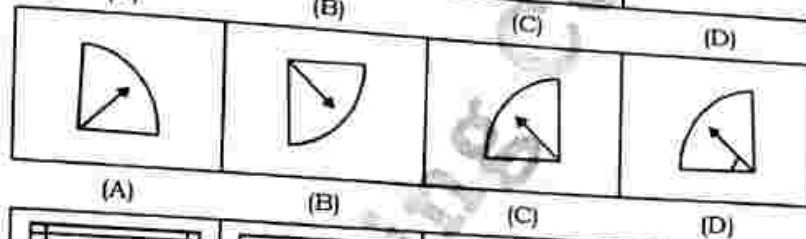
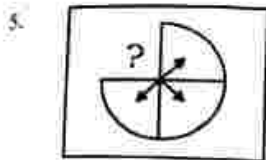
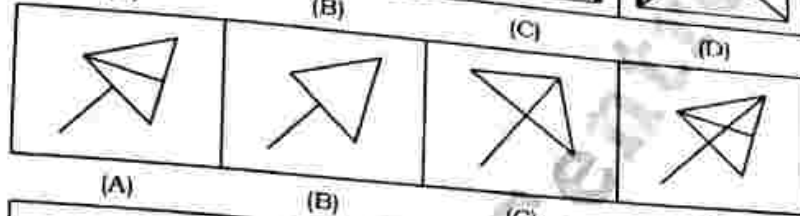
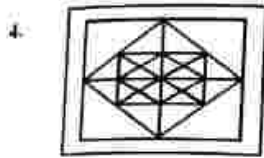
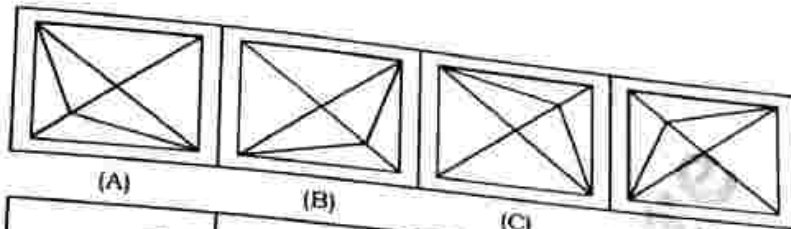
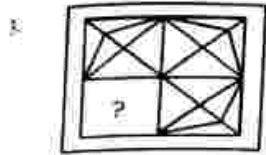


(A)

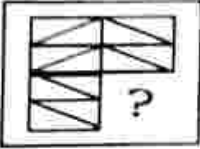
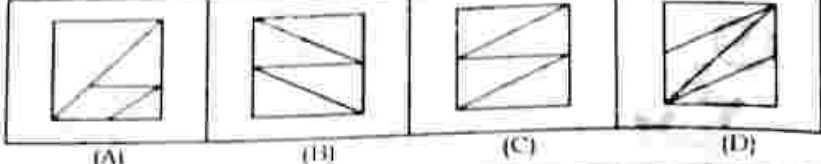
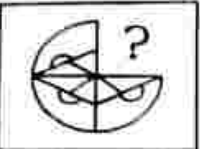
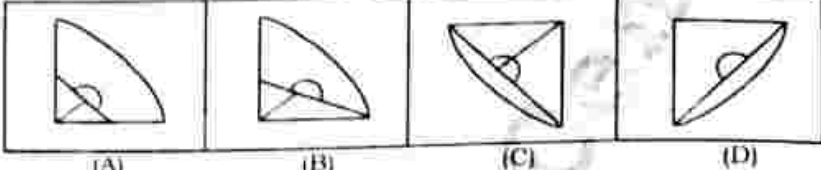
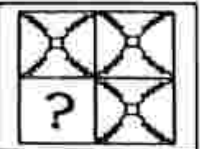
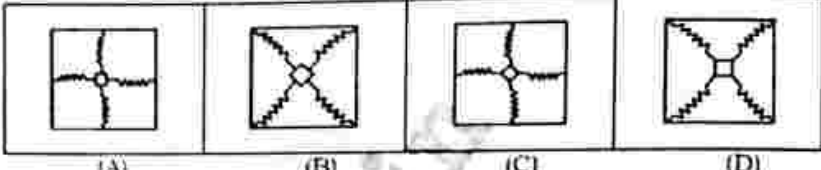
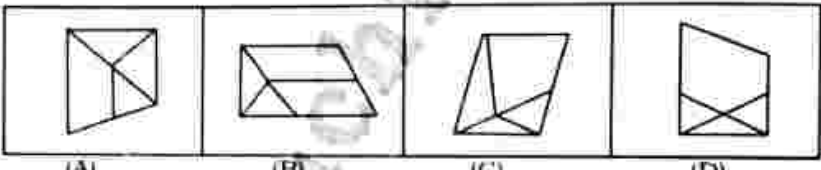
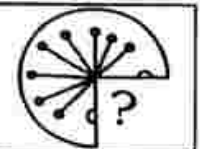
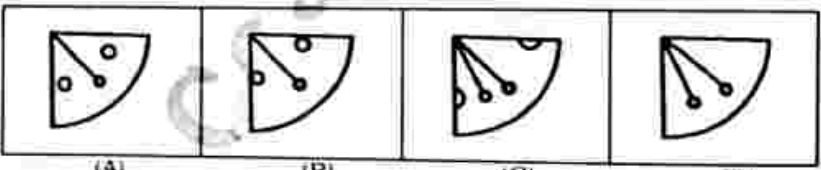
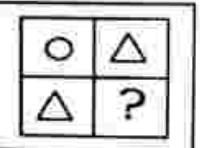
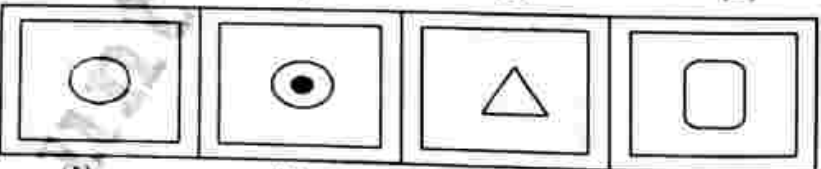
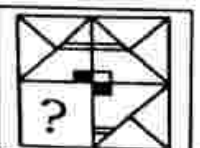
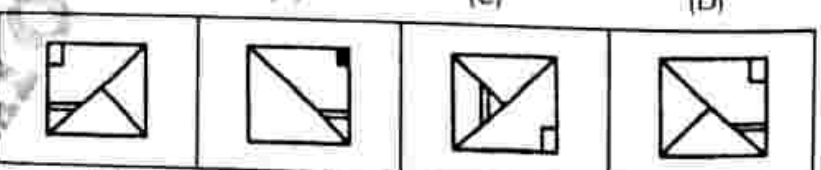
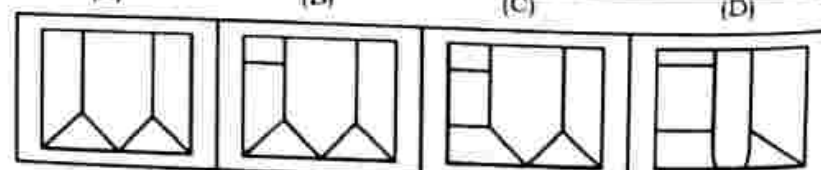
(B)

(C)

(D)



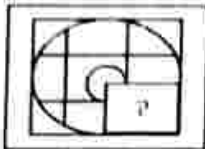
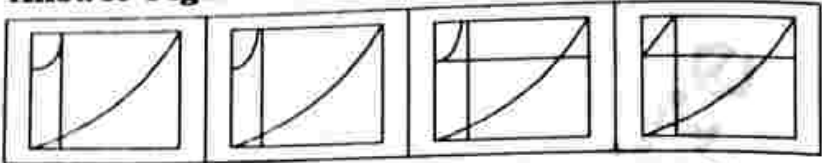
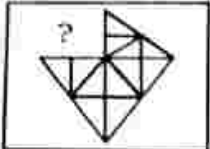
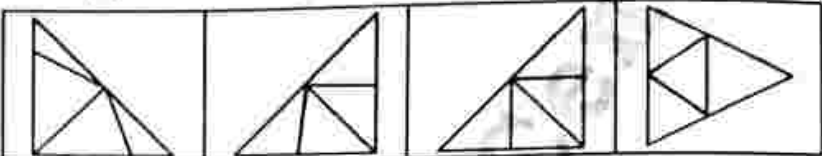
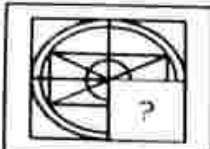
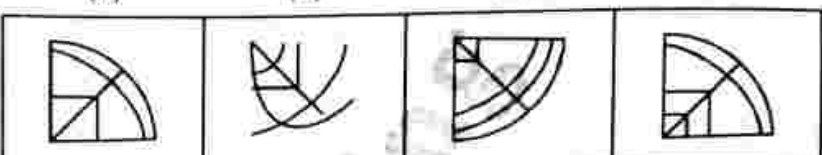
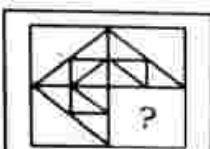
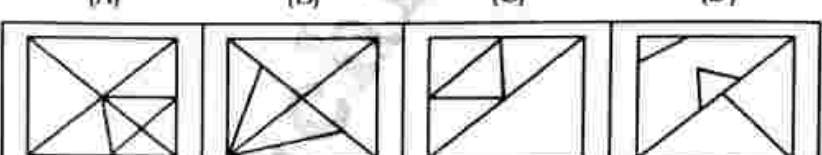
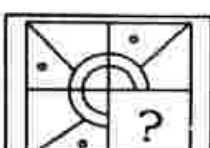
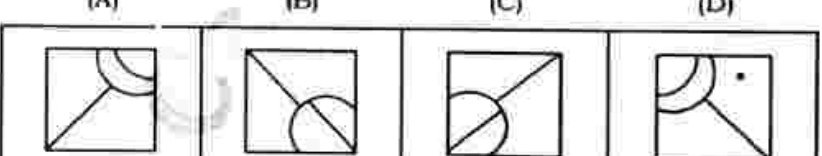
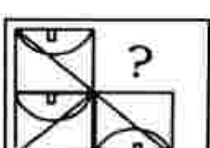
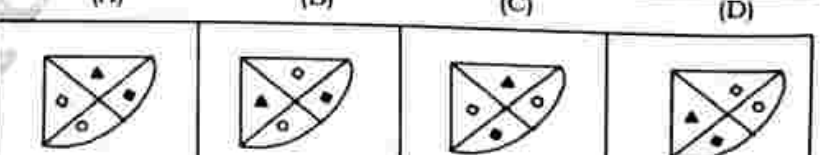
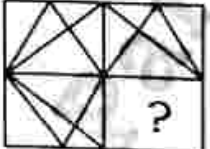
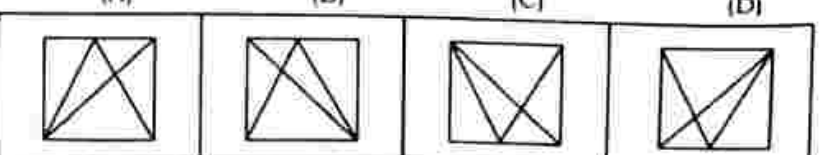
Problem Figure Answer Figure

11.  
12.  
13.  
14.  
15.  
16.  
17.  
18.  

Problem Figure Answer Figure

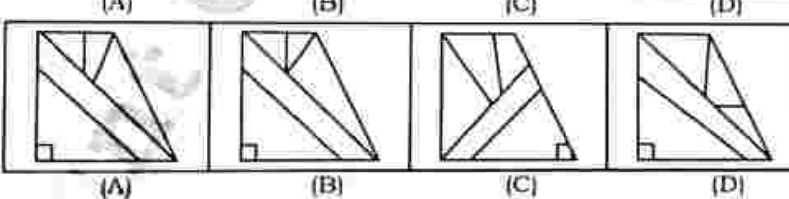
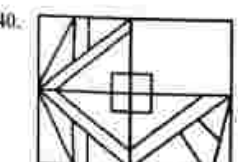
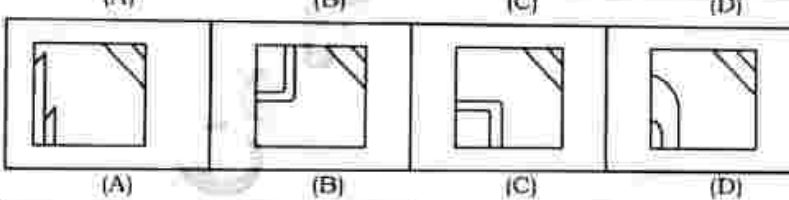
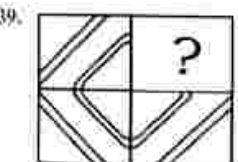
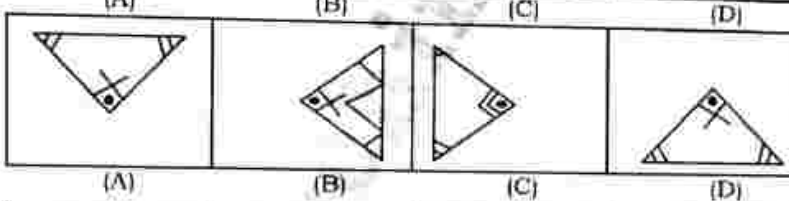
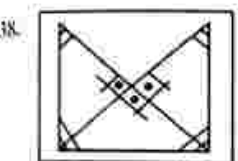
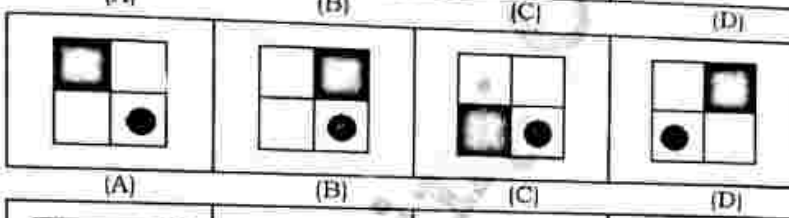
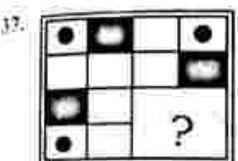
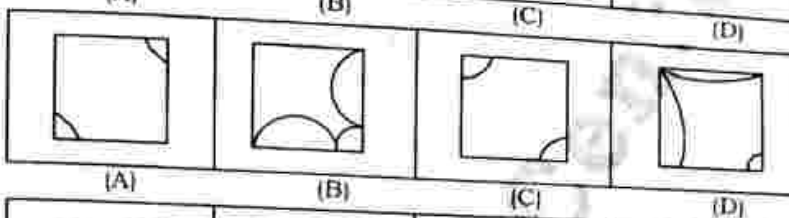
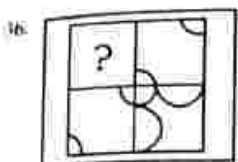
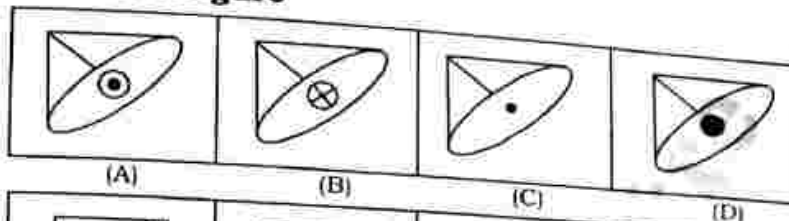
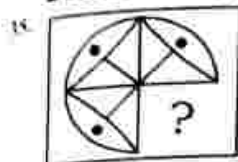
19.		(A)	(B)	(C)	(D)
20.		(A)	(B)	(C)	(D)
21.		(A)	(B)	(C)	(D)
22.		(A)	(B)	(C)	(D)
23.		(A)	(B)	(C)	(D)
24.		(A)	(B)	(C)	(D)
25.		(A)	(B)	(C)	(D)
26.		(A)	(B)	(C)	(D)

Problem Figure Answer Figure

27.  
- (A) (B) (C) (D)
28.  
- (A) (B) (C) (D)
29.  
- (A) (B) (C) (D)
30.  
- (A) (B) (C) (D)
31.  
- (A) (B) (C) (D)
32.  
- (A) (B) (C) (D)
33.  
- (A) (B) (C) (D)
34.  
- (A) (B) (C) (D)

Problem Figure

Answer Figure

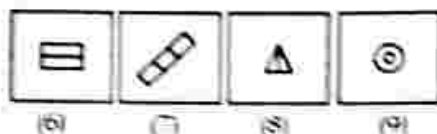
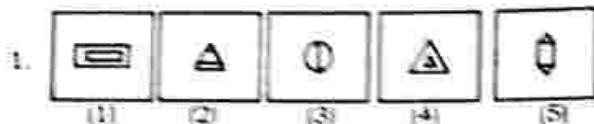


ANSWERS

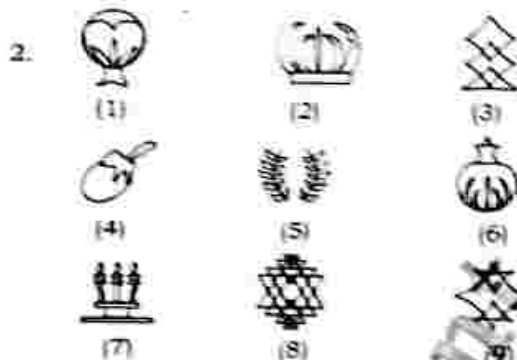
- | | | | | | |
|---------|---------|---------|---------|---------|---------|
| 1. (C) | 2. (C) | 3. (A) | 4. (C) | 5. (C) | 6. (C) |
| 7. (A) | 8. (A) | 9. (B) | 10. (C) | 11. (C) | 12. (A) |
| 13. (D) | 14. (B) | 15. (C) | 16. (A) | 17. (D) | 18. (B) |
| 19. (C) | 20. (A) | 21. (B) | 22. (B) | 23. (A) | 24. (A) |
| 25. (D) | 26. (C) | 27. (C) | 28. (B) | 29. (B) | 30. (C) |
| 31. (D) | 32. (D) | 33. (A) | 34. (D) | 35. (C) | 36. (B) |
| 37. (C) | 38. (D) | 39. (D) | 40. (D) | | |

GROUPING OF FIGURES

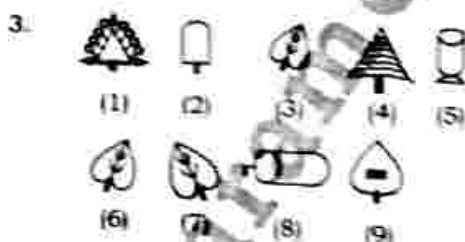
Directions (Question Nos. 1 - 9) : A series of figures are given, and these can be grouped into classes. Select from amongst the alternatives one set of groups into which these figures can be classified.



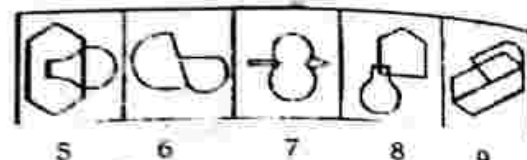
- (A) 1, 3, 8; 2, 4, 6; 5, 7, 9
(B) 1, 4, 9; 3, 6, 8; 2, 5, 7
(C) 3, 4, 7; 9, 5, 7; 4, 3, 1
(D) 2, 3, 6; 9, 3, 4; 6, 3, 2



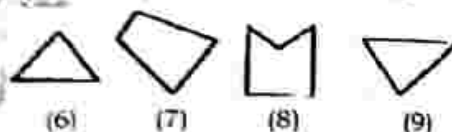
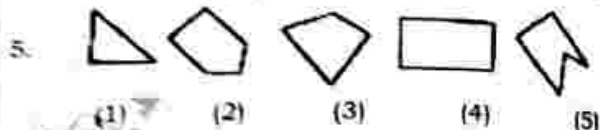
- (A) 1, 4, 6; 2, 5, 7; 3, 8, 9
(B) 1, 2, 4; 5, 6, 7; 3, 8, 9
(C) 1, 4, 6; 3, 8, 7; 2, 5, 9
(D) 1, 2, 6; 4, 7, 9; 3, 5, 8



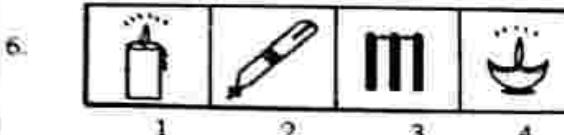
- (A) 1, 4, 9; 2, 5, 8; 3, 6, 7
(B) 2, 5, 8; 1, 4, 6; 3, 7, 9
(C) 3, 6, 7; 2, 5, 8; 1, 2, 9
(D) 2, 5, 8; 3, 6, 9; 4, 6, 7



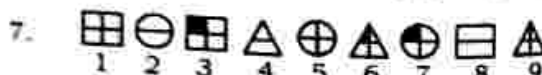
- (A) 139, 267, 458 (B) 139, 278, 456
(C) 139, 257, 268 (D) 135, 249, 678



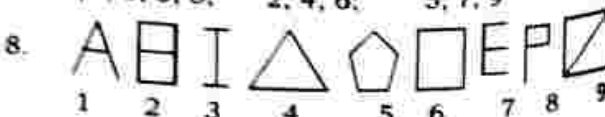
- (A) 789, 243, 156 (B) 132, 457, 689
(C) 168, 347, 259 (D) 169, 347, 258



- (A) 146, 35, 278 (B) 258, 138, 46
(C) 37, 145, 258 (D) 258, 16, 47



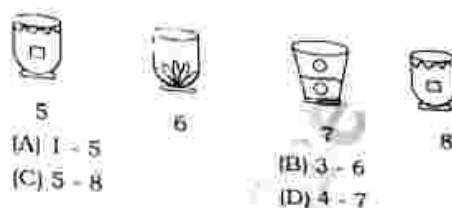
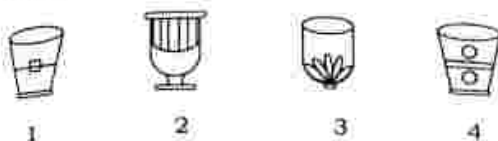
- (A) 2, 4, 8; 1, 5, 9; 3, 6, 7
(B) 1, 3, 8; 2, 4, 9; 5, 6, 7
(C) 2, 4, 8; 1, 6, 7; 3, 5, 9
(D) 1, 3, 8; 2, 4, 6; 5, 7, 9



- (A) 1, 3, 4 2, 5, 9 6, 7, 8

- (B) 1, 2, 3 4, 5, 6 7, 8, 9
 (C) 1, 5, 9 2, 4, 7 3, 6, 8
 (D) 3, 7, 8 1, 6, 5 4, 2, 9

9. Four pairs of flower pots are given below. Among them only one pair is similar in all respect. Identify the pair numbers which represent that pair.



Answers

1. (B) One within another
 1, 4, 9

Divided into two
 3, 6, 8

Divided into three
 2, 5, 7

2. (A)
 3. (A) 1, 4, 9; 2, 5, 8; 3, 6, 7
 4. (A)
 5. (D)
 6. (A)
 7. (A)
 8. (A)
 9. (C)



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